ENERGIEFFEKTIVISERING I TRANSPORTSEKTORN

Ett program finansierat av Energimyndigheten

Litteraturreferenser och information om forskningsprojekt

2010-2015

Bibliotek och informationscenter vid
Statens väg- och transportforskningsinstitut
2015

Bibliotek och informationscenter, BIC, vid Statens väg- och transportforskningsinstitut, VTI

Linköping, 2015

FÖRORD

Projektet ”Utveckling av modell för systematisk informationsinhämtning och resultatspridning av FoU för området energieffektivisering inom transportsektorn” syftar till att visa på hur information om forskning och dess resultat kan presenteras på ett översiktligt och tilltalande vis samtidigt som det garanterar en beständig tillgång till information om projektet och till de rapporter som innehåller resultat av forskning och demonstrationsförsök. För det syftet har har en webbplats skapats av BIC, Bibliotek och informationscenter vid VTI, Statens väg- och transportforskningsinstitut. Webbplasen http://energi.transportportal.se ingår i den portal för transportforskning som BIC utvecklat och drivit sedan 1996.

Projektet har också tagit fram denna rapport där referenser till litteratur publicerad 2010-2015 samt information om forskningsprojekt under samma period redovisas. För att finna litteratur utgiven i Sverige har ”Nationell bibliotekskatalog” vid VTI använts. Källorna för de internationella resultaten har varit databaserna ”WorldWideEnergy”, ”Scopus” och ”TRID”. Information om pågående eller nyligen avslutad forskning har hämtats från ”Cordis” och ”TRIP, Transport Research and Innovation Portal”.

Projektet ”Utveckling av modell för systematisk informationsinhämtning och resultatspridning av FoU för området energieffektivisering inom transportsektorn” finansieras av Energimyndigheten och pågår under tiden 2014-2017. Utförare är BIC, Bibliotek och informationscenter vid VTI, Statens väg- och transportforskningsinstitut med Birgitta Sandstedt, VTI, som projektledare. Hillevi Nilsson Ternström, VTI, har gjort informationssökningarna i databaserna och sammanställt underlaget. Claes Eriksson, VTI, har redigerat rapporten.

Denna rapport kan laddas ner från http://energi.transportportal.se/index.php/635-litteraturreferenser-och-information-om-forskningsprojekt-2010-2015

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ENERGIEFFEKTIVISERING I TRANSPORTSEKTORN: LITTERATURREFERENSER OCH INFORMATION OM FORSKNINGSPROJEKT 2010-2015

SYFTE

Denna rapport har tagits fram inom projektet ”Utveckling av modell för systematisk informationsinhämtning och resultatspridning av FoU för området energieffektivisering inom transportsektorn”, finansierat av Energimyndigheten. Syftet med sammanställningen är att presentera nationella och internationella resultat från forskning och demonstrationsförsök, vilka publicerats de senaste fem åren. I denna rapport ingår också en förteckning över pågående och nyligen avslutade internationella forskningsprojekt inom ämneområdet energieffektivisering inom transportsektorn. Projektets andra del är webbplatsen http://energi.transportportal.se där denna rapport finns tillgänglig för nedladdning.

METOD

Inhämtning av information har gjorts i olika typer av databaser, vilka redovisas nedan.

NATIONELL BIBLIOTEKSKATALOG VID VTI

VTI:s Bibliotek och informationscenter, BIC, har Sveriges största enskilda samling av litteratur inom trafik, transporter och infrastruktur. BIC:s ”Nationell bibliotekskatalog” innehåller referenser och länkar till bland annat forskningsrapporter, avhandlingar, konferenshandlingar, böcker och statistik. Sedan några år tillbaka ligger fokus på svensk forskning och utgivning.

WORLDWIDEENERGY

En gemensam söksida för en stor samling databaser och webbsidor inom energiområdet där man kan hitta artiklar, rapporter, konferensbidrag, faktablad, statistk m.m. Den 2014 nedlagda ETDE World of Energy Base ingår.

SCOPUS

Scopus är världens mest omfattande bibliografiska databas och största delen av innehållet består av referenser till vetenskapliga artiklar. Databasen täcker alla ämnesområden.

TRID

Den största bibliografiska databas som finns inom transportområdet. TRID bevakar både de viktigaste vetenskapliga tidskrifterna inom ämnet och utgivningen från förlag, akademi, organisationer och myndigheter. Drivs av Transportation Research Board (TRB) i USA i samarbete med organisationer i övriga världen. bl.a. i Europa och Australien. Även pågående forskning ingår.

CORDIS

Europeiska kommissionens webbplats för den EU-finansierade forskningen där delen Projects & Result Service är en databas över både pågående och avslutade forskningsprojekt och deras resultat.

TRIP

TRIP, Transport Research and Innovation Portal, är en webbplats specialiserad på transportforskningen inom EU men även europeisk forskning utanför ramprogrammen, både på nationell och internationell nivå, ingår. TRIP har, precis som Cordis, en sökbar databas över projekt och resultat.

RESULTAT AV LITTERATURSÖKNING I ”NATIONELL BIBLIOTEKSKATALOG” VID VTI

EFFEKTIVISERING AV TÄTORTSTRANSPORTER (HÅLLBARA STÄDER)

På rätt spår: metod- och verksamhetsutveckling i samverkan för ökat kollektivtrafikresande: en projekt- och processbeskrivning

Sandén, Bodil

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_002501_002600/Publikation_002580/P%c3%a5%20r%c3%a4tt%20sp%c3%a5r%20-%20Projektrapport.pdf

Denna rapport dokumenterar processen av FUD-projektet På rätt spår – Metod- och verksamhetsutveckling i samverkan för ökat kollektivtrafikresande som WSP i samverkan med kollektivtrafikbranschen genomfört på uppdrag av Trafikverket. I rapporten ges en kort bakgrund till projektet som har kommit att avgränsats till proaktiv företagsrådgivning. Syfte och avgränsningar beskrivs liksom det ges en kortfattad projekt- och processbeskrivning. Avslutningsvis sammanfattar vi projektets resultat och slutsatser. Under våren 2014 kommer denna rapport även kompletteras med en utvärdering av projektet.

WSP

Stockholm, 15 s, 795 kB, 2014

Index terms: Public transport, Marketing
Ämnesord: Kollektivtrafik, Marknadsföring
Extra ämnesord: Tjänsteresor

På rätt spår: metod- och verksamhetsutveckling i samverkan för ökat kollektivtrafikresande: Resultatrapport

Sandén, Bodil

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_002501_002600/Publikation_002581/P%c3%a5%20r%c3%a4tt%20sp%c3%a5r%20-%20Resultatrapport.pdf

Denna rapport handlar om proaktiv företags-bearbetning inom kollektivtrafikbranschen, d v s trafikorganisationers försäljning av kollektiv-trafikresor till företag och organisationer. Vi har medvetet valt proaktiv företagsrådgivning som namn på området vi studerar som alternativ till företagsförsäljning och företagsrådgivning. Proaktivitet har vi sett som viktig att betona eftersom det handlar om ett, för kollektivtrafiken ganska nytt arbetssätt där man aktivt går ut och bearbetar företag och organisationer för att få dem att i större utsträckning välja kollektiva färdmedel för sina resor. Bearbetning har vi valt för att betona att arbetet kan gå till på många olika sätt. Allt från att ”kränga” års- och företagskort genom kampanjer till att bygga långsiktiga relationer och där själva säljprocessen därför kan vara tidskrävande. Rapporten är skriven i förhoppningen om att utgöra ett lättöverskådligt, relativt kortfattat och pedagogiskt enkelt material över branschens och projektets ackumulerade kunskap inom området. Fokus har legat på att visa områdets bredd och ge det en struktur och en logik snarare än att gå på djupet inom valda eller alla delar. Fokus har även legat på att lyfta de strategiska frågorna eftersom det är där projektet har ansett sig kunna göra mest nytta och bidra. På frågor som berör det mer operativa och praktiska arbetet hänvisar vi till de verkliga experterna inom området: företags- försäljarna själva, de som varje dag är ute och möter företag och organisationer.

WSP

Stockholm, 61 s, 3,03 MB, 2014

Index terms: Public transport, Marketing
Ämnesord: Kollektivtrafik, Marknadsföring
Extra ämnesord: Tjänsteresor

Station community transitions: a matter of push or pull?

Forsemalm, Joakim; Hadasch, Ilona; Palmås, Karl

http://publications.lib.chalmers.se/records/fulltext/175117/175117.pdf

A growing trend in Swedish physical planning and (sub)urban regeneration, as response to the need for more dense urban environments, is the increased focus on Station communities. These environments constitute a possibility for urban regions to grow in a sustainable fashion, at least discursively. In this context, the Gothenburg region - generally planned for car use but with high ambitions in terms of an objective to double the use of public transportation until 2025 – stand before interesting challenges and opportunities. Several major infrastructural projects focusing on commuter traffic are planned for take off within the next decade. These will affect not only the regional center in the shape of a train tunnel under great parts of Gothenburg, but also neighboring municipalities with train stations along the commuter routes into Gothenburg central station. From that background, in this report, three different municipalities, with stations located within a commuter distance of 20 minutes from that central station, are studied through the use of qualitative interviews and in some respect also document studies. Being informed by the same objective (i.e. the "doubling" of public transportation, a regional objective for all municipalities within the Gothenburg region), one could suspect that approaches on how to develop strategic places like communities around commuter train stations would have some resemblance. However, due to great variations in terms of push and pull factors, and not least differences when it comes to protagonists, urban identities and urban values expressed, what works in Mölnlycke in Härryda municipality doesn't do so in Älvängen in Ale municipality, nor Floda, in Lerum municipality – and vice versa. This study shows that narration is just as important for the construction of station communities as are an advantageous geographical position along strategic train lines. The context of this report is Catch MR (Cooperative approaches to transport challenges in Metropolitan Regions), an Interreg IVC project that has run from 2010 throughout 2012. Catch MR has gathered twelve public partners in seven European regions - Berlin, Budapest, Oslo, Vienna, Rome, Gothenburg and Ljubljana around issues of life quality and competitiveness in urban regions.

Mistra Urban Futures Mistra Urban Futures Papers 2013:1

Göteborg, 27 s, 1,53 MB, 2013

Index terms: Railway station, Commuter traffic, Urban development
Ämnesord: Järnvägsstationer, Stadsutveckling
Extra ämnesord: Stationssamhällen

Kollektivtrafikens urverk: att dra nytta av de schweiziska framgångsfaktorerna i en avreglerad marknad

Bösch, Stephan; Clark, Anna; Andersson, PG; Fält, Sebastian

http://www.transportportal.se/Energieffektivitet/Kollektivtrafikens-urverk.pdf

Syftet med detta arbete är att undersöka hur den nya avregleringen av kollektivtrafiken kan påverka kollektivtrafikens framgång, och hur detta i sin tur kan påverka energiförbrukning och energibesparingspotential från kollektivtrafik. Faktorer som bidrar till ett framgångsrikt kollektivtrafiksystem – ”nyckelfaktorer” – belyser anledningar till det välfungerande kollektivtrafiksystemet i Schweiz. Dessa nyckelfaktorer identifieras och analyseras i ett svenskt sammanhang – med lärdomar från Schweiz och Storbritannien – med syfte att svara på följande frågor: - Vilka är de faktorer som bidrar till att Schweiz har ett framgångsrikt kollektivtrafiksystem? - Hur skulle dessa framgångsfaktorer påverkas av avregleringen från den nya lagstiftningen i Sverige? - Vilken effekt har detta på energibesparingspotential från kollektivtrafik? Med hjälp av de valda framgångsfaktorerna kan tillsammans med den schweiziska kollektivtrafiken som förebild och detta arbetes genomgång beskrivas kärnan för en framgångsrik kollektivtrafik. De viktigaste delarna är tillförlitlighet, geografisk tillgänglighet, integration (samordning) och enkelhet. Dessa ingredienser framstår på olika sätt som viktiga. För det första är det den schweiziska kollektivtrafiken som har dessa faktorer i fokus. Det är anmärkningsvärt att dessa delar också täcks av den schweiziska lagstiftningen.

Trivector Traffic Rapport 2012:90

Lund, 107 s, 3,81 MB, 2012

Index terms: Public transport, Attractiveness (transp), Improvement, Deregulation, Switzerland, United Kingdom
Ämnesord: Kollektivtrafik, Attraktivitet (transporter), Förbättring, Avreglering, Schweiz, Storbritannien

Trender med påverkan på samhällsplaneringen: omvärldsanalys med fokus på transport, infrastruktur och bebyggelse

Ljungberg, Christer; Sundberg, Rasmus; Wendle, Björn

http://www.trivector.se/fileadmin/uploads/Traffic/Rapporter/Trender_med_paverkan_pa_samhallsplaneringen__2012_69_skickad.pdf

Boverket genomför ett regeringsuppdrag att formulera en vision för Sverige år 2025 med ett samhällsplaneringsperspektiv. Visionen ska grundas på de nationella mål som berör fysisk samhällsplanering (ca 100 st.), en omvärldsana-lys och kartläggning av utvecklingen inom de olika samhällsområden som kan komma att påverka hushållningen med landets mark-och vattenområden, den fysiska planeringen, den byggda miljön, byggandet och förvaltningen av bebyggelse samt boendet. Boverket har nu lagt ut uppdrag till tre olika uppdragstagare. Syftet är att få hjälp att sammanställa och i viss mån bedöma framförallt internationella trender idag, år 2025 och år 2050 som påverkar och kommer att påverka den fysiska samhällsplaneringen och samhällsutvecklingen i Sverige. Boverket vill ha en sammanställning som omfattar internationella, europeiska och nationella trender som finns idag och/eller kan förväntas finnas åren 2025 respektive 2050 och som påverkar den fysiska samhällsutvecklingen. Förfrågan till Trivector omfattar ”tema infrastruktur och bebyggelse”. I parallella uppdrag studeras även ”tema demografi och bebyggelse” samt ”tema natur/miljö och ekonomi”.

Trivector Traffic Rapport 2012:69

Lund, 34 s, 713 kB, 2012

Index terms: Long term, Trend (stat), Demography, Urban development, Natural resources, Climate change, Transport, Journey, Forecast
Ämnesord: Långsiktig, Trend, Demografi, Stadsutveckling, Naturtillgångar, Klimatförändringar, Transporter, Resor, Prognoser

Elcyklar och cykelinfrastrukturen: kräver elcyklar en förändring i hur vi planerar för cykel?

Koucky, Michael; Ljungblad, Hanna

http://www.cycity.se/docs/CyCity_DP12_Rapport_final.pdf

Cyklar med elektrisk stödmotor, så kallade elcyklar eller pedelecs, är en förhållandevis ny fordonskategori i Sverige som i växande utsträckning syns i trafiken. Elmotorn tillför extra kraft till cyklisten och gör därmed cykelfärden lättare, snabbare och gör backar och motvind mindre utmanande. Andelen elcyklar i Sverige är fortfarande låg och uppskattas till enstaka procent av den totala cykelförsäljningen och under en procent av det totala antalet cyklar. Men trenden i andra länder är tydligt: I Nederländerna har exempelvis andelen elcyklar av alla nysålda cyklar ökat från enstaka procent till runt var femte cykel år 2012 och långsiktigt förväntas elcyklar utgöra en mindre, men betydande del av cykelflottan, från 5S20% av samtliga cyklar. Denna rapport är en del av det svenska cykelforskningsprojektet CyCity. Den ska belysa om en ökad andel elcyklar i trafiken kommer att ställa förändrade krav på cykelinfrastrukturen och dess planering, och om så är fallet, vilka.

Koucky & Partners

Göteborg, 25 s, 1,00 MB, 2012

Projektnamn: CyCity

Index terms: Electric bicycle, Cycle track, Parking, Planning
Ämnesord: Elcyklar, Cykelbanor, Parkering, Planering, Laddning (elfordon)

Framtidens personresor: slutrapport - dokumentation från slutkonferens hösten 2011 för programmet, framtidens personresor

Nilsson, Andreas

http://www.vinnova.se/upload/EPiStorePDF/vr_12_11.pdf

I en tid då globala utmaningar ger lokala avtryck är det särskilt angeläget med forskning och kunskapsutveckling inom kollektivtrafikområdet. Storstadsregionerna växer och en allt större andel av vår befolkning bor i städer, vilket ökar trycket på en kollektivtrafik som är tillgänglig, hållbar och ekologiskt gångbar. En utvecklad kollektivtrafik innebär en lägre belastning på vår närmiljö och i förlängningen även på det globala klimatet. Samtidigt stimuleras ekonomisk utveckling och social utjämning – viktiga komponenter för en hållbar utveckling! Denna slutrapport är en dokumentation av slutkonferensen för Framtidens personresor som genomfördes hösten 2011. Vid konferensen presenterades resultat från projekt som fått finansiering inom programmet sedan dess start 2007. Vår förhoppning är att projektresultaten ska bidra till en mer effektiv och attraktiv kollektivtrafik samt till nyttiggörande och värdeskapande av kunskap inom kollektivtrafikområdet.

Verket för Innovationssystem. VINNOVA Vinnova rapport VR 2012:11 1650-3104

Stockholm, 60 s, 2012

ISBN: 978-91-86517-74-8

Index terms: Passenger transport, Journey, Public transport
Ämnesord: Persontransporter, Resor, Kollektivtrafik

Testprojekt - uppföljning av kommunfordon: databaslösning för förbättrad uppföljning av kommuners fordonsbestånd, körsträckor, bränsleförbrukning och dess miljö- och klimatbelastning

Haddeland, Pia

https://online4.ineko.se/trafikverket

Trafikverket initierade hösten 2012 ett test-/utvecklingsprojekt med syftet att via en databaslösning förbättra kommunernas möjligheter att följa upp sitt fordonsbestånd och dess miljöbelastning på ett mer rationellt sätt. Tidigare erfarenheter visade att olika kommuner arbetade på skilda sätt och att det manuella arbetet varit, och fortfarande är, mycket stort. Uppgifter om körsträckor och bränsleförbrukning, därmed också kostnader, har varit svåra att överblicka och sammanställa på ett effektivt sätt.

Trafikverket Publikation 2013:133

Borlänge, 24 s, 0,42 MB, 2013

ISBN: 978-91-7467-524-5

Index terms: Fleet of vehicles, Local authority, Fuel consumption, Alternative energy, Administration
Ämnesord: Fordonspark, Kommunalförvaltning, Bränsleförbrukning, Förnybara energikällor, Administration

Nye kollektive mobilitetsløsninger - bildeling som case

Nenseth, Vibeke; Julsrud, Tom Erik; Hald, May

Bildeling innebærer at medlemmer bruker biler et bilkollektiv eller en bedrift eier. Det tilbyr bilbrukens fordeler og fritar en for bilholdets ulemper. Helt nye intelligente mobilitets-tjenester som kobler biler og brukere, gjør at bildeling kan bli et betydelig alternativ til privat bilhold, spesielt i byer. En delebil erstatter 5-15 privatbiler, og bildelere bruker bilen omtrent 1/3 mindre enn bileiere. I tillegg gjør nyere biler, og ikke minst dagens satsing på elbiler i bildelingsordningene, at utslippene kan gå ned. Urbaniseringen, digitaliseringen og en mer offensiv politisk støtte er faktorer som gjør at bildeling kan ta av, også i norsk sammenheng.

Transportøkonomisk institutt (TØI) TØI rapport 1218/2012 0808-1190

Oslo, 36 s, 1,21 MB, 2012

ISBN: 978-82-480-1359-4

Index terms: Car sharing
Ämnesord: Bilpooler

Optimising bike sharing in European cities: final project report

Kalina, Janett (ed)

http://www.obisproject.com/palio/html.wmedia?_Instance=obis&_Connector=data&_ID=976&_CheckSum=555594706

OBIS

uo, 27 s, 7,22 MB, 2011

Projektnamn: EU: OBIS, Optimising Bike Sharing in European Cities,

Intelligent Energy Europe programme (IEE)

Index terms: Bicycle, Leasing, Urban area, Europe, Development, Impact study
Ämnesord: Cyklar, Hyra, Tätorter, Europa, Utveckling, Effektstudier

Optimering av lånecykelsystem i europeiska städer: handbok

Büttner, Janett; Mlasowsky, Hendrik; Birkholz, Tim; Gröper, Dana; Castro Fernández, Alberto; Emberger, Günter; Petersen, Tom; Robèrt, Markus; Serrano Vila, Susana; Reth, Philipp; Blümel, Hermann; Romero Rodriguez, Carles; Pla Pineda, Elena; Piotrowicz, Andrzej B; Ejsmont, Rafal; Kuropatwinski, Piotr; Kowalewska, Magdalena; Vecchiotti, Filippo; Reiterer, Harald; Robert, Sebastien; Gagneur, Jaques; Richard, Olivier; Jean, Maxime; Basterfield, Sara; Williamson, Chris; Snead, Charles; Giles, Neal; Georgiou, Elena; Galatik, Jiri; Pliskova, Radomira; Martinek, Jaroslav; Menichetti, Marco; Banfi, Matteo

http://www.obisproject.com/palio/html.wmedia?_Instance=obis&_Connector=data&_ID=1014&_CheckSum=-1048644664

The main result of the project - Optimising Bike Sharing in European Cities - A Handbook – presents interesting facts and figures from bike sharing schemes in ten European countries. Scheme characteristics such as technology, scheme size, service design etc. are described in connection with external factors of the cities. Finally the handbook gives comprehensive advice for all three stages in the lifetime of a BSS: Planning, Implementation and Optimisation

OBIS

uo, 94 s, 6,55 MB, 2011

Projektnamn: EU: OBIS, Optimising Bike Sharing in European Cities,

Intelligent Energy Europe programme (IEE)

Övrig info: Finns även på engelska: Optimising bike sharing in European cities: a handbook

Index terms: Bicycle, Leasing, Urban area, Europe, Planning, Financing, Recommendations
Ämnesord: Cyklar, Hyra, Tätorter, Europa, Planering, Finansiering, Rekommendationer

Traengselsafgift i hovedstaden: miljøundersøgelse - vurdering af de miljømæssige konsekvenser

http://www.vejdirektoratet.dk/DA/viden_og_data/publikationer/Lists/Publikationer/Attachments/22/Rapport_tr%c3%a6ngselsafgift.pdf

Trafikken i Hovedstadsområdet er efterhånden blevet så stor, at den ikke kan afvikles effektivt på vejnettet. Det giver trængsel og forsinkelser på vejnettet, som udgør et samfundsmæssigt problem, der svækker væksten og forringer miljøet. Øget trængsel medfører øget transporttid, og der spildes hver dag mange timer i køer i Hovedstadsområdet. På motorvejsnettet i Hovedstadsområdet er der i dag trængsel i op til fl ere timer dagligt. På mange strækninger falder hastigheden i over en time om dagen til under 40 km /t. Målinger viser også, at hastighederne på motorvejene har været faldende eller stagnerende i perioden 2004 - 2010 i spidsbelastningsperioderne. Dette gælder til trods for, at der er gennemført en række motorvejsudbygninger i perioden og til trods for den økonomiske krise. Beregninger fra Københavns Kommune viser, at trafi karbejdet i Hovedstadsområdet i perioden 2001 - 2010 er steget med ca. 20 %, og trængslen på vejene er i samme periode steget med næsten 30 %. Trængslen er blandt andet på baggrund af den økonomiske krise de seneste år ligesom trafi kken faldet lidt, men det forventes, at trafi kken og trængslen over tid vil stige igen. En trængselsafgift vil reducere biltrafi kken væsentligt og dermed sikre en bedre fremkommelighed på vejnettet. De trafi kale analyser viser, at en trængselsafgiftsring kan fjerne op imod halvdelen af den tid, bilister spilder i køer på de større indfaldsveje i Hovedstadsområdet. Beregningerne viser, at bilisterne, afhængig af linjeføring for trængselsafgiftsringen, samlet set vil spare op til 15.600 timer om dagen. Denne tidsbesparelse er mere end den samlede beregnede tidsbesparelse for alle motorvejsprojekter i Hovedstadsområdet, der er politisk besluttet indenfor de seneste 10 år.

Vejdirektoratet VD rapport 407

Köpenhamn, 181 s, 27,23 MB, 2012

ISBN: 978-87-7060-664-6

Index terms: Congestion charging, Planning, Impact study (environment), Prediction
Ämnesord: Trängselavgifter, Planering, Miljöpåverkan, Förutsägelser

Transportsystem för hållbar utveckling och konkurrenskraft: Slutrapport från projektet Transport 2030

http://www.iva.se/Documents/Publikationer/Projekt/201011-IVA-Transport2030-slutrapport-M.pdf

Projektet Transport 2030 syftar till att lägga en grund för fortsatt samverkan mellan näringsliv, akademi och myndigheter i Sverige för att skapa bättre förutsättningar för en hållbar utveckling av transportsystemet under de kommande tjugo åren. Projektet inleddes under 2009 med att företrädare för intressenter i transportsystemet utarbetade en gemensam framtidsbild – ”Hållbar mobilitet 2030” (IVA rapport, 2010). Under 2010 identifierades en rad pågående större projekt med potential att utvecklas till demonstrationsmiljöer för nationellt betydelsefulla åtgärder som krävs för att nya lösningar i transportsystemet ska kunna etableras. Projektet har också identifierat områden för helt nya utvecklingsinsatser. Det har blivit tydligt för alla som medverkat i projektet att vi delar en vision som bygger på samsyn om utmaningar och mål. Vi har också insett att inget enskilt företag, ingen sektor eller samhällsnivå och inte heller staten eller EU kan mobilisera de resurser och tillhandahålla de förutsättningar som krävs för att kunna hantera utmaningarna och implementera nya lösningar på ett tillräckligt framgångsrikt sätt. Projektets viktigaste förslag är att det bör skapas ett forum för strategisk utveckling av transportsektorn som långsiktigt ska driva utvecklingen mot en hållbar mobilitet. Just nu pågår mycket stora, snabba och genomgripande förändringar i omvärlden som kan innebära allvarliga hot mot vår samlade livskvalitet. Om vi väljer att samarbeta i olika nationella och internationella forum finns unikt goda möjligheter att bidra till transportlösningar som i global skala kan leda till väsentligt minskade hot mot miljön, ökad individuell välfärd och stärkt konkurrenskraft för näringslivet.

Kungl. Ingenjörsvetenskapsakademien (IVA) 1102-8254

Stockholm, 39 s, 1,87 MB, 2010

ISBN: 978-91-7082-828-7

Övrig info: Transport 2030

Index terms: Transport, Planning, Policy, Development, Sustainability, Forecast, Research project
Ämnesord: Transporter, Planering, Policy, Utveckling, Hållbar utveckling, Prognoser, Forskningsprojekt

Future public transport for all: usability and accessibility in station areas

Verma, Ira; Hätönen, Johanna; Aro, Päivi

http://www.sotera.fi/pdf/TER_Loppuraportti_eng_small.pdf

Regardless of their age and functional capability, access for all user groups is improved by good rail traffic design and improved station accessibility. Safe, accessible public transport benefits all user groups, while helping to meet sustainable development goals and contributing; to the creation of a socially sustainable urban environment. The aim of the Future Public Transport for All Project was to create a comprehensive picture of the accessibility and usability of rail traffic terminals and of solutions impacting on thesuccess of the entire journey. The user study was conducted in co-operation with the Finnish Association of People with Physical Disabilities, the Finnish Federation of Hard of Hearing,and the Finnish Federation of the Visually Impaired. Data was collected via interviews and online questionnaires, as well as observational tours of rail traffic stations with representatives of various user groups. The entire journey was analysed, from the starting point to the final destination. Needs for; further development were identified in terms of journey planning, the use of public transport and station accessibility. The study resulted in guidelines on the application of recognised best practices and new planning solutions in creating accessible rail traffic terminals.The study reveals that rail traffic and public transport would be more widely used if they weresafe and accessible. Potential users can be attracted to public transport through improvements in communication, the station area, guidance and feeder traffic. This project formed part of the Tekes Sustainable community technology programme and of Helsinki's Innovative City Programme. The project's main development targets, and the main sources of funding, were the Western Metro and Ring Rail Line. Other participants included the Finnish Ministry of Transport and Communications, the Finnish Transport Agency, the Cities of Espoo and Vantaa, Finavia, Helsinki City Transport (HKL) and Helsinki Region Transport; (HSL).

Aalto University. School of Science and Technology. Department of Architecture Publications on architecture 11/2010 1797-8351

Helsingfors, 53 s, 2,17 MB, 2010

ISBN: 978-952-60-3443-0

Index terms: Railway station, Accessibility, Disabled person
Ämnesord: Järnvägsstationer, Tillgänglighet, Personer med funktionsnedsättning

Hållbar pendling till Malmö: analys och förslag till åtgärder

Ljungberg, Caroline

http://www.tft.lth.se/fileadmin/tft/dok/publ/5000/thesis220_CL_scr.pdf

Pendlingen i Sverige har ökat de senaste åren, och särskilt i Skåne och Öresundsområdet som följd; av den regionförstoring som skett och som bidragit till att vi rör oss över större ytor. Syftet med; examensarbetet är att kartlägga inpendlares färdmedelsval till Malmö, studera pendlingens effecter; och möjliga åtgärdstyper, samt att ta fram konkreta åtgärdsförslag för ett mer hållbart regional; resande till Malmö. Genom litteraturstudier och arbete i databasen till resvaneundersökningen; ”Resvanor Syd” kunde inpendlarnas färdmedelsval kartläggas, med en hög andel bilister. Dessutom; gjordes en fallstudie för resvanorna på SUS, Skånes Universitetssjukhus. Fyra åtgärdstyper valdes; att fokusera på, Mobility Management, Tränselavgifter, Parkeringsstyrning samt bättre; kollektivtrafikavgifter. Som övergripande åtgärd för Malmö föreslås arbete med parkeringsstyrning; kombinerat med Mobility Management. Även trängselavgifter kan bli aktuellt i framtiden, om; Malmö fortsätter att växa som det gör idag.

Lunds universitet. Lunds tekniska högskola. Teknik och samhälle. Trafik och väg Thesis 220 1653-1922

Lund, 72 s, 1,28 MB, 2011

Index terms: Journey to work, Transport mode, Parking, Mobility management, Sustainability
Ämnesord: Arbetsresor, Transportslag, Parkering, Mobility management, Hållbar utveckling
Extra ämnesord: Färdmedelsval

Utvärdering av effektsamband för bilpool

https://online4.ineko.se/trafikverket

Bilpooler bör ses som en del av ett resandesystem med kollektivtrafik, gång, cykel, samåkande, lånad bil, taxi och hyrbil.; Bilpooler ger effekt på minskad CO2 eftersom bilarna släpper ut mindre CO2 än genomsnittet och eftersom bilpoolsanvändare reser mer kollektivt och på andra sätt löser sitt resandebehov än med egen bil.; Bilpooler ger också en god effekt på trafiksäkerhet, men denna är inte kvantifierad. Tillgängligheten påverkas antingen inte alls eller möjligen något positivt.

Trafikverket Publikation 2012:160

Borlänge, 1,99 MB, 78 s, 2012

ISBN: 978-91-7467-363-0

Index terms: Car sharing, Impact study, Journey, Behaviour, Emission, Carbon dioxide, Cost, Subsidy
Ämnesord: Bilpooler, Effektstudier, Resor, Beteende, Emissioner, Koldioxid, Kostnader, Subventioner

Institutionella krav som grund för förändring av e-infrastrukturen för co-modala resor med järnväg

Eriksson, Owen

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001401_001500/Publikation_001491/Slutrapport%20FUD%202010-92150_Utveckling%20av%20innovativa%20kundorienterade%20IT-baserade%20j%c3%a4rnv%c3%a4gstj%c3%a4nster.pdf

Transportområdet är ett område som tidigt började använda sig av IT-tekniken och denna; utveckling har accelererat under den senaste 20 åren. Många av de IT-komponenter som idag; används inom transportområdet är applikationer som utvecklades under 70- 80- och 90-talet.; Dessa applikationer, som kallas för den installerade basen i rapporten, utvecklades för att; stödja enskilda organisationer, enskilda transportslag samt lokala/regionala transporter, vilket; innebär att de är slutna och inte bygger på öppna standarder. Dessa applikationer har; utvecklats successivt och stora ekonomiska resurser går idag till förvaltning och drift av dessa; applikationer. Ny teknologi, avreglering samt ökade krav på ett effektivt och hållbart resande; med hjälp av flera transportslag har dock skapat ett ökat behov av informationssamverkan; mellan dessa applikationer. Man behöver därför öppna upp denna komplexa struktur av; applikationer för att kunna skapa en e-infrastruktur av samverkande IT-komponenter som kan; användas för inter-organisatorisk, inter-regional och transportslagsövergripande samverkan.; Att utveckla en sådan e-infrastruktur innebär en ny form av samhällsbyggande som kräver; kombinerade kunskaper om IT och transportverksamhet. Detta inkluderar kunskaper om; institutionella, organisatoriska och affärsmässiga förutsättningar samt de förändringar som; sker inom transportområdet.

Viktoriainstitutet

Göteborg, 36 s, 2011

Övrig info: Ingår som bilaga i ”Utveckling av innovativa kundorienterade

IT-baserade järnvägstjänster”

Index terms: Passenger information, Real time, Telecommunication, Mobile phone, Internet
Ämnesord: Resenärsinformation, Realtid, Telekommunikation, Mobiltelefoner, Internet

Buss, BRT och spårväg: en jämförelse

Sandberg, Lars

http://www.snt.se/portfolio/WSP__Rapporter_fran_WSP/Buss_BRT_och_sparvag_-_en_jamforelse_WSP_20110426.pdf

WSP Analys & Strategi har på uppdrag av Sv. Bussbranschens Riksförbund, BIL Sweden, Volvo, Scania, Mercedes-Benz och MAN gjort en komparativ analys mellan traditionell busstrafik, Bus Rapid Transit (BRT) och spårväg dels generellt mellan transportslagen när det gäller kostnader, miljöpåverkan, passagerarkapacitet, restid, spårfaktorn och flexibilitet och dels i en fördjupad analys av fyra planerade eller diskuterade spårprojekt: - Spårväg som föreslås ersätta stombusslinje 4 i Stockholm, - Tvärspårväg Syd i Stockholm, - Spårväg Helsingborg, - Spårväg som föreslås ersätta busslinje 16 i Göteborg.

WSP Sverige AB. WSP Analys & Strategi Rapport 2011:1

Stockholm, 153 s, 2,3 MB, 2011

Övrig info: Alternativ titel: Bussens fördelar vi

kollektivtrafiksatsningar

Index terms: Bus, Rapid transit system, Light rail, Life cycle assessment, Cost, Public transport
Ämnesord: Bussar, Spårvägar, Livscykelanalys, Kostnader, Kollektivtrafik

Transportlösningar inom Arbetsförmedlingen: kartläggning och effekter av omställning till bilpool

Hanander, Max; Nordlund, Jesper; Hyllenius, Pernilla

https://online4.ineko.se/trafikverket

Arbetsförmedlingen genomförde under 2008 en inventering av den egna bilparkens status, kostnader och nyttjandegrad. Detta resulterade i ett internt uppdrag att göra en omställning från egen bilpark till nya transportlösningar med extern bilpool.; Från 2008 till 2010 har Arbetsförmedlingen gått från att äga omkring 425 tjänstebilar till knappt 250 tjänstebilar. För att ersätta dessa avyttrade tjänstebilar har man dels erbjudit långtidshyrda hyrbilar via ett statligt ramavtal, men man har också upphandlat och infört en kommersiell bilpool på 9 orter runtom i landet under 2009, med totalt 50 fordon, vilka ersätter 65 av de avyttrade tjänstebilarna.; Syftet med föreliggande utredning har varit att visa på vad i bilbruket som förändrats mellan 2008 och 2010, och att utvärdera vilka effekter detta gett. Utvärderingen har inspirerats av SUMO (System för Utvärdering av Mobilitetsprojekt), och omfattar dels en heltäckande kartläggning, dels fallstudier på fem utvalda orter.

Trafikverket Publikation 2011:148

Borlänge, 1,89 MB, 50 s, 2011

ISBN: 978-91-7467-216-9

Index terms: Car sharing, Organization (association)
Ämnesord: Bilpooler, Organisationer
Extra ämnesord: Tjänsteresor

MaxLupoSE: råd om hur mobility management kan användas i den kommunala planeringen

Neergaard, Karin; Håkansson, Madelene

https://online4.ineko.se/trafikverket

Under 2006-2009 deltog Trivector Traffic i EU-projektet MAX, det största forskningsprojektet inom mobility management inom EU:s sjätte ramprogram. Slutprodukten blev en rad användbara verktyg inom mobility management. Ett av verktygen som togs fram var MaxLupo, som handlar om hur (i första hand) kommuner kan integrera mobility management i planeringen för att minska beroendet av privata motoriserade transporter och uppnå ett mer hållbart resande.; Slutprodukten består bland annat av ett antal viktiga principer och åtgärder, en bilaga med ett hundratal goda exempel från Europa och workshop-metod för att diskutera planeringsfrågor med berörda aktörer. En styrka med MaxLupo är att den visar på olika konkreta sätt att få byggherrar och verksamhetsutövare att medverka till hållbara transportlösningar.; I denna rapport har MaxLupo omarbetats och anpassats till svenska förhållanden för att vara mer användbart för svenska kommuner.

Trafikverket Publikation 2011:146

Borlänge, 2,34 MB, 64 s, 2011

ISBN: 978-91-7467-214-5

Index terms: Mobility management, Parking, Parking pricing, Carfree, Residential area, Local authority, Planning, Policy
Ämnesord: Mobility management, Parkering, Parkeringsavgifter, Bilfri, Bostadsområden, Kommunalförvaltning, Planering, Policy

LOV, logistik och transportarbete: principer och simuleringar för hemtjänsten

Schillander, Per

https://online4.ineko.se/trafikverket

Hemtjänsten i en kommun är den verksamhet som använder sig av i särklass flest personbilar och kör flest mil. Tidigare utredningar har visat att transportvolymen (körsträckan) kan minskas kraftigt med hjälp av logistik i verksamhetsplaneringen. Med en effektivare verksamhetsplanering frigörs arbetstid, minskar kostnader, miljöpåverkan och stress. Med kortare körsträckor minskar exponeringen i trafiken och tillsammans med en minskad stress förbättras arbetsmiljö och trafiksäkerhet.; Sedan 2009 gäller Lag om valfrihetssystem som ett frivilligt verktyg för de kommuner och landsting som vill överlåta valet av utförare av vård- och omsorgstjänster till brukaren/invånaren. Det innebär bland annat att kommunerna själva kan bestämma om, när, på vilket sätt och hur mycket man vill konkurrensutsätta sin hemtjänstverksamhet. Flera kommuner har infört eller är på väg att införa valfrihet inom hemtjänsten.; Inom logistiken gäller generellt att ju fler utförare som ska dela på ett visst antal leveranser/uppdrag/besök, desto svårare att skapa effektiva rutter. Stordriftsfördelarna inom transportlogistiken är tydliga. Med många ineffektiva rutter blir de sammanlagda körsträckorna längre. Syftet med dessa utredningar är att undersöka vilka effekter som kan förväntas på körsträckorna när en viss andel av hemtjänstuppdragen läggs ut på en eller flera privata entreprenörer. Analysen bygger på ett antal genomförda simuleringar med en etablerad programvara för ruttoptimering. Som underlag har använts avidentifierat, aktuellt material från två sydsvenska kommuner.

Trafikverket Publikation 2011:156

Borlänge, 2,97 MB, 50 s, 2011

ISBN: 978-91-7467-228-2

Index terms: Journey, Work, Car, Route (itinerary), Optimization, Logistics, Simulation
Ämnesord: Resor, Arbete, Bilar, Rutter, Optimering, Logistik, Simulering

Studies on bikeability in a metropolitan area using the active commuting route environment scale (ACRES)

Wahlgren, Lina

http://urn.kb.se/resolve?urn=urn:nbn:se:gih:diva-1873

BAKGRUND: Färdvägsmiljöer kan tänkas påverka människors fysiskt aktiva arbetspendling och därmed bidra till bättre folkhälsa. Studier av färdvägsmiljöer är därför önskvärda för att öka förståelsen kring möjliga samband mellan fysiskt aktiv arbetspendling och färdvägsmiljöer. En enkät, ”The Active Commuting Route Environment Scale” (ACRES), har därför skapats i syfte att studera fysiskt aktiva arbetspendlares upplevelser av sina färdvägsmiljöer. Huvudsyftet med denna avhandling var dels att studera enkätens psykometriska egenskaper i form av validitet och reliabilitet, dels att studera arbetspendlande cyklisters upplevelser av sina färdvägsmiljöer. METODER: Arbetspendlande cyklister från Stor-Stockholm rekryterades via tidningsannonsering och via direkt kontakt i anslutning till färdvägen. Deltagarna besvarade enkäten ACRES. Tillsammans med skattningar från en grupp av experter och redan existerande objektiva mått användes förväntade skillnader mellan färdvägsmiljöer i inner- och ytterstaden för att studera kriterierelaterad validitet. Reliabiliteten studerades som reproducerbarhet via upprepade mätningar (test-retest). Jämförelser mellan skattningar av deltagare rekryterade via annonsering och via direkt kontakt i färdvägsmiljöer användes för att studera representativitet. Skattningar av färdvägsmiljöer i inner- och ytterstaden användes vidare för att studera färdvägsmiljöprofiler. Multipel linjär regressionsanalys användes även för att studera sambandet mellan utfallsvariabeln huruvida färdvägsmiljön motverkar eller stimulerar arbetspendling med cykel och miljöprediktorer, såsom avgasnivåer, trafikens hastighet och grönska, i innerstadsmiljöer. RESULTAT: Enkäten ACRES visade god kriterierelaterad validitet och rimlig reproducerbarhet. Det var en god överrensstämmelse mellan skattningar av deltagare rekryterade via annonsering och via direkt kontakt. Färdvägsmiljöprofilerna visade tydliga skillnader mellan inner- och ytterstadsmiljöer. Ytterstadens färdvägsmiljöer skattades som tryggare och mer stimulerande för arbetspendling med cykel än innerstadens färdvägsmiljöer. Vidare verkar vackra, gröna och trygga färdvägsmiljöer, oberoende av varandra, vara stimulerade faktorer för arbetspendling med cykel i innerstadsmiljöer. Däremot verkar höga avgasnivåer, höga trängselnivåer och färdvägar som kräver många riktningsändringar vara motverkande faktorer. SLUTSATSER: Enkäten ACRES är ett användbart instrument vid mätningar av cyklisters upplevelser av sina färdvägsmiljöer. Ett antal faktorer relaterade till färdvägsmiljön verkar vara stimulerande respektive motverkande för arbetspendling med cykel. Generellt sett på visar resultaten ett relativt outforskat och komplext forskningsområde.

Örebro University Örebro studies in sport sciences 13 1654-7535

Örebro, 202 s, 3,25 MB, 2011

ISBN: 978-91-7668-815-1

Index terms: Cyclist, Cycling, Journey to work, Route (itinerary), Choice, Attitude (psychol), Environment, Thesis
Ämnesord: Cyklister, Cykling, Arbetsresor, Rutter, Val, Attityder, Miljö, Doktorsavhandling

Gondolbanor: en del av kollektivtrafiken

Olsson, Magnus

http://www.tft.lth.se/fileadmin/tft/dok/publ/5000/Thesis218_scr.pdf

För att öka kollektivtrafikens marknadsandelar bör man satsa på de faktorer som resenärerna värderar högst. Kollektivtrafikens attraktivitet beror till stora delar på faktorerna restid, turtäthet och pålitlighet. Att driva kollektivtrafik med hög attraktivitet är emellertid mycket kostsamt med konventionella färdmedel. Det krävs i princip egen bana och ett stort antal förare för att kunna erbjuda hög pålitlighet och turtäthet. Gondolbanor, som är en typ av linbana, kan många gånger vara ett attraktivt men samtidigt billigt alternativ till de konventionella färdmedlen. Genom att systemen är förarlösa, samt att dyra broar eller tunnlar ej krävs, erbjuder systemen hög turtäthet till en relativt liten investeringskostnad. Eftersom de är automatiska blir också pålitligheten mycket hög. Denna studie undersöker möjligheterna att använda gondolbanor som kollektivtrafik i Sverige och i Stockholm. Resultaten indikerar att gondolbanor kan vara ett realistiskt alternativ till konventionell kollektivtrafik. Gondolbanor bör övervägas som ett utredningsalternativ där såväl naturliga som bebyggda barriärer komplicerar genomförandet av kollektivtrafik med hög kapacitet.; Populär sammanfattning på svenska:
http://www.tft.lth.se/fileadmin/tft/dok/publ/Artiklar/Artikel_MO_218.pdf

Lunds universitet. Lunds tekniska högskola. Teknik och samhälle. Trafik och väg. Thesis 218 1653-1922

Lund, 70 s + bil (8 s), 2,68 MB, 2011

Index terms: Aerial cableway
Ämnesord: Linbanor

Transfer of Innovative Policies Between Cities to Promote Sustainability: Case Study Evidence

Marsden, Greg; Frick, Karen Trapenberg; May, Anthony D; Deakin, Elizabeth

http://dx.doi.org/10.3141/2163-10

This paper describes how cities approach the challenging task of identifying, considering, and adopting innovative transport policies. Drawing on political science literature, the paper begins by establishing a framework for analyzing the process of policy transfer and policy learning. Cities were selected on the basis of their reputation for having adopted innovative policies. Data were collected from project reports and in-depth interviews with 40 professionals comprising planners, consultants, and operators in 11 cities across North America and northern Europe. This paper presents the findings from three key innovations: congestion charging, compact growth and transport planning, and carsharing. Each of these innovations was implemented at several sites, and there was evidence of learning across the sites studied. The case studies present a discussion of each policy alongside indications of its positive and negative impacts and then examine how the different cities approached the task of learning about how to introduce it and the issues that they faced. The paper identifies conditions that appear to support effective learning: reliance on strong networks of personal and professional contacts, drawing lessons from multiple sites, and financial and institutional support to facilitate the uptake of risky or technologically immature innovations.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2163, s 89-96, 2010

ISBN: 9780309142939

Climate Change and Urban Transportation in Latin America: Analysis of Recent Projects

McAndrews, Carolyn; Deakin, Elizabeth; Schipper, Lee

http://dx.doi.org/10.3141/2191-16

Urban transportation investments present an opportunity to mitigate climate change while supporting effective, clean, safe, and equitable transportation. This study reports on the response of a set of urban transportation investments in Latin America to climate change. A sample of recent transportation projects funded by an international bank was analyzed to learn what kinds of infrastructure, plans, and policies were being pursued and to assess whether projects developed specifically to address climate change differed from other projects. Loans and grants supported a mix of infrastructure for transit, bicycles, and pedestrians, as well as institutional strengthening. Although only a few projects explicitly addressed climate change mitigation, their impacts on mode choice and urban development almost surely have had positive effects compared with what would have happened without them. In some cases, however, funding for road construction at the urban fringe may induce outward urban expansion and greater automobile use. Specifically analyzing the carbon consequences of all projects as well as their combined effects in the overall system would provide better ability to track and take credit for carbon mitigation and also could flag potential problem areas.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2191, s 128-135, 2010

ISBN: 9780309160667

Understanding Transport Demand Management and Its Role in Delivery of Sustainable Urban Transport

Black, Colin S; Schreffler, Eric N

http://dx.doi.org/10.3141/2163-09

Outdated notions of transport demand management (TDM) as a collection of vaguely related initiatives are constraining the true potential of the concept. This paper explains how TDM is far more effective when it is framed as a philosophical approach that in time is likely to become a cornerstone of sustainable urban transport systems. A new paradigm internationally recognized as TDM is emerging in transport planning. This new paradigm embraces under its umbrella concepts commonly referred to as mobility management, smarter choices, and active travel management. Transport professionals worldwide have been collaborating to update the understanding of TDM as a philosophy that underpins the approach to improving the sustainability of transport. A review of TDM internationally demonstrated the importance of combining a number of key aspects to an effective strategy. Key to the successful transfer of sustainable urban transport policies is integrating the TDM philosophy into urban transport planning, as well as the daily management and operation of transport services and infrastructure. The paper presents a powerful policy tool developed to assist with this process of integration, the Mobility Enhancement and Trip Reduction Index to Aid Comparison (METRIC). METRIC is used internationally to benchmark comparative progress on the implementation of TDM.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2163, s 81-88, 2010

ISBN: 9780309142939

Bicycling and Transit: A Marriage Unrealized

Krizek, Kevin J; Stonebraker, Eric W

http://dx.doi.org/10.3141/2144-18

When effectively integrated with transit services, bicycling may achieve various environmental, health, and congestion-mitigation benefits for communities. A successful marriage between the two will most likely result in increasing (a) the catchment area and subsequent patronage of transit, (b) the efficiency of transit, and (c) the overall demand for cycling. A core problem, however, exists in that the predominant approach for integrating bicycling and transit vehicles frequently runs against capacity restraints. Effectively integrating bicycling and transit requires analysis of a broad range of alternatives that consider the travel patterns and needs of individuals and accompanying urban form characteristics. To fill a void in the literature concerning integrating bicycling and transit, this paper surveys existing knowledge about the two modes, describes three innovative initiatives that show promise in addressing capacity limitations, and sketches an analysis framework for communities and transit agencies to maximize the integration of bicycling and transit. A preliminary index is developed to predict cycling transit user (CTU) generation at transit stops. Factors identified in the literature as important in determining the share of CTUs (i.e., transit mode, location in the urban fabric, access and egress distance, and trip purpose) are nonuniform among communities, indicating that solutions must be tailored to fit local circumstances. Although the literature has traditionally focused on bicycles aboard transit, real gains will most likely be realized through initiatives such as bicycle stations and bicycles at egress locations for use with egress trips. Analysis relying on robust cost-effectiveness could help transit agencies with increased integration of bicycling and transit.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2144, s 161-167, 2010

ISBN: 9780309160469

Bättre tjänsteresor i Orust: BKT uppföljning 2010

https://online4.ineko.se/trafikverket

Denna uppföljning av Bättre kommunala tjänsteresor (BKT) i Orust är genomförd av Trafikverket under hösten och vintern 2010 och har till syfte att visa hur utvecklingen varit i Orust sedan pilotprojektet kommunal reserevision avslutades 2007. Uppföljningen har tittat på hur bilarna administreras (fordonsekonomin) och hur resorna planeras (transportlogistiken). Uppföljningen bygger huvudsakligen på underlag från leverantörsavtal, beskrivning av vagnparken, ekonomisk rapportering, statistik från två hemtjänstgrupper samt från intervjuer.

Trafikverket. Publikation 2011:096

Göteborg, 779 kB, 34 s, 2011

ISBN: 9789174671629

Index terms: Journey, Work, Policy, Management, Planning, Route (itinerary), Emission, Carbon dioxide
Ämnesord: Resor, Arbete, Policy, Ledning och organisation, Planering, Rutter, Emissioner, Koldioxid

Bilpooler och kollektivtrafik: internationella exempel på samarbetsformer: rapport

Koucky, Michael; Edelman, Todd

https://online4.ineko.se/trafikverket

Kollektivtrafikbolag och bilpooler har mycket att vinna på att samarbeta eftersom deras tjänster kompletterar varandra. Internationellt finns det flera exempel på långtgående och framgångsrika samarbeten mellan bilpooler och kollektivtrafikbolag. Rapporten beskriver olika samarbetsformer mellan bilpooler och kollektivtrafikbolag, där olika former av marknadsföring, rabatter och prova-på-erbjudanden är vanliga. Svenska kollektivtrafikbolag och bilpooler rekommenderas att inleda samarbeten.

Trafikverket. Publikation 2011:043

Borlänge, 1,19 MB, 32 s, 2011

ISBN: 9789174671100

Index terms: Car sharing, Public transport, Case study
Ämnesord: Bilpooler, Kollektivtrafik, Fallstudier

Bilpoolstrategi: övergripande strategi för tjänstefordon inom Västra Götalandsregionen

https://online4.ineko.se/trafikverket

Västra Götalandsregionen har ca 2000 fordon, varav 1300 tjänstebilar. Tillsammans med hyrbilar och milersättning kör de 3 miljoner mil och kostar 140 miljoner kr. Ca 400 bilar finns i bilpooler, resten sköts av VGRs många förvaltningar. En utspridd hantering döljer kostnader och försvårar styrning och uppföljning. Potentialerna är minst 19 miljoner kr och 500 ton CO2. Rapporten anger hur en central funktion för alla bilar kan organiseras. I ett senare skede finns möjlighet att pröva outsourcing.

Trafikverket. Publikation 2011:008

Borlänge, 1,16 MB, 51 s, 2011

ISBN: 9789174671056

Index terms: Fleet of vehicles, Organization (association), Car sharing, Administration
Ämnesord: Fordonspark, Organisationer, Bilpooler, Administration

Current practices in greenhouse gas emissions savings from transit

Gallivan, Frank; Grant, Michael

http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_syn_84.pdf

This synthesis describes the role of transit agencies in reducing greenhouse gas (GHG) emissions and catalogues the current practice of a sample of transit agencies. The purpose of this synthesis is to inform transit agencies on how their services and operations specifically impact GHG missions from transportation. Transportation is one of the largest sources of GHG emissions in the United States. Policymakers, planners, and transportation agencies are increasingly considering how the transportation sector can reduce its GHG emissions. This goal presents a complex challenge with no one single solution for transit agencies. They can contribute to this goal by increasing total ridership, boosting the numbers of passengers on individual trips, and reducing their use of energy from fossil-based sources. However, planning for and implementing strategies to reduce GHG emissions are still developing scenarios in the transit industry. Many transit agencies are struggling with how a goal to reduce GHG emissions can fit with their traditional planning objectives. Research for this study included a literature review, a survey of 41 transit agencies (66% response rate), and interviews with three agencies. The agencies that responded to the survey were all implementing or planning to implement reduction strategies. Agency interviews were based on depth of agency experience with reducing GHG emissions and implementation of unique strategy types.

Transit Cooperative Research Program. TCRP synthesis 84

Washington DC, 77 s, 7,94 MB, 2010

ISBN: 9780309143035

Index terms: Public transport, Emission control, Fuel consumption, Energy conservation, Greenhouse gas, Environment protection, Policy, Method, Planning

Båtpendling för ökad kapacitet

Jansson, Kjell

http://trafa.se/PageDocuments/Rapport_2013_8_Baatpendling_foer_oekad_kapacitet.pdf

Mellan många områden i större städer i Sverige, kanske mest accentuerat i Stockholm, är det trängsel både på vägar och i kollektivtrafiken. Och dessa problem förväntas växa även om kollektivtrafiken byggs ut. Frågan är om båt kan utgöra ett effektivt komplement till andra kollektiva trafikmedel? Denna rapport visar med hjälp av ett räkneexempel att svaret är ja. Båt kan förmodligen i vissa sträckningar utgöra en samhällsekonomiskt effektivt länk i en kedja tillsammans med andra kollektiva trafikmedel. Tidigare utvärderingar av nya båtlinjer har ställt frågan om dessa är lönsamma utöver redan existerande kollektivtrafik. Syftet med denna rapport är annorlunda genom att fokusera på båt som ett komplement där det råder eller kan komma att råda kapacitetsbrist. Rapporten utgör ett diskussionsunderlag där båt jämförs med andra kollektiva färdmedel i form av kostnader för fordon, anläggningar (inklusive infrastruktur), drift, åktid, väntetid samt externa effekter, vilka summerar till total samhällsekonomisk kostnad. Jämförelsen visar att båt tycks stå sig bra samhällsekonomiskt sett.

Trafikanalys Rapport 2013:8

Stockholm, 66 s, 2013

Index terms: Journey to work, Inland waterway transport
Ämnesord: Arbetsresor, Inlandssjöfart

Trafik i hållbara städer: en kunskapssammanställning med rekommendationer

Smidfelt Rosqvist, Lena; Adell, Emeli; Bösch, Stephan; Indebetou, Lovisa; Neergaard, Karin; Nilsson, Annika; Linderholm, Leif

http://www.trivector.se/fileadmin/uploads/Traffic/Rapporter/Trafik_i_hallbara_stader_101011_v2_skickad.pdf

Trafikutskottet (TU), Miljö- och jordbruksutskottet (MJU) och Civilutskottet (CU) har beslutat att under 2010 ta fram en forsknings- och framtidsanalys om hållbara städer. Riksdagens utredningstjänst har i uppdrag att ta fram denna forskningsöversikt och framtidsanalys för att ta fram scenarier och goda exempel för hur hållbara och klimatsmarta städer kan se ut i framtiden. De delar av arbetet som berör transporter i staden har lagts ut på Trivector Traffic AB. Fokus i denna rapport ligger på att ge en forskningsöversikt.

Trivector Traffic Rapport 2010:56

Lund, 83 s, 1,25 MB, 2010

Index terms: Sustainable transport, Town planning, Journey
Ämnesord: Hållbara transporter, Stadsplanering, Resor

Comparison of Parking Requirements in Zoning and Form-Based Codes

Hananouchi, Robert; Nuworsoo, Cornelius

http://dx.doi.org/10.3141/2187-18

There is growing recognition of the negative effects of rapid suburbanization, also known as urban sprawl, which has dominated the development of urban areas for the past several decades. Both land use and transportation policies have contributed to this form of development, creating communities devoid of nearby services and with a characterless urban form and dependence on automobiles for travel. To address these issues, urban planners, architects, developers, and policy makers are considering form-based codes to guide and regulate urban development that creates complete and compact neighborhoods. Whereas form-based codes address urban form and land use, this study focuses on how parking requirements inhibit or support efforts to reduce urban sprawl and automobile dependency. Form-based codes are growing in popularity, and this paper investigates specifically parking policies in these types of land use regulations. This study finds that parking policies in the Miami 21 form-based code and Duany Plater-Zyberk's SmartCode do not offer a greatly different approach to parking than conventional zoning ordinances. The findings show that these codes have not fully embraced solutions from parking critics to address the issues of urban sprawl and automobile dependency. Both codes include some marginal improvements to existing parking policies but do not maximize the potential form-based codes offer to include more progressive solutions to reduce automobile dependency by limiting excesses in parking requirements. This paper recommends that future form-based codes integrate more progressive parking policy solutions to reduce automobile dependency and urban sprawl.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2187, s 138-145, 2010

ISBN: 9780309160605

Methodology of Impact Fees Emphasizing Vehicle Miles Traveled

Seggerman, Karen E; Williams, Kristine M; Lin, Pei-Sung; Fabregas, Aldo D; Nelson, Arthur C; Nicholas, James C

http://dx.doi.org/10.3141/2187-06

This paper provides a working concept and methodology for application of a mobility fee in Florida. The mobility fee has many characteristics of an impact fee modified for sensitivity to vehicle miles traveled (VMT). Policy and practical implications of implementing such a fee are addressed, along with the fee methodology and illustration of the approach through hypothetical testing in Alachua County, Florida. The primary concept for the mobility fee is a modified impact fee assessed on new development. The approach presented anticipates regional cooperation in the development and adoption of a mobility plan that includes all transportation modes. Through sensitivity to VMT, the modified impact fee may help to discourage urban sprawl and reward mixed-use development and other development near or within existing activity centers. The hypothetical test results reveal that the two approaches - the average rate and the location-based rate - produce very different fees for new development. The paper reports on research performed for the Florida Department of Community Affairs.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2187, s 36-43, 2010

ISBN: 9780309160605

Corridor Approaches to Integrating Transportation and Land Use

Rooney, Kathleen; Savage, Karen; Rue, Harrison; Toth, Gary; Venner, Marie

http://dx.doi.org/10.3141/2176-05

Transportation agencies nationwide are under pressure to help address a wider range of transportation issues than ever before in the United States. Many of them extend beyond traditional state department of transportation (DOT) activities and span of control. There is an interconnection between transportation and land use that the public and local decision makers do not often see. Yet the public frequently holds DOTs responsible for solving transportation problems resulting from local and regional land use decisions and preferred development patterns. The objective of this research is to identify and explore successful innovations in integrating transportation and land use planning for transportation corridors, with a focus on practices that could be transferred to other locations. A case study approach was used to identify projects that integrated, rather than merely linked, land use and transportation planning and decision making. This paper summarizes six case studies: Chicago Metropolitan Agency for Planning, Illinois; Envision Utah and the Mountain View Environmental Impact Statement, Utah; Gateway Route 1, Maine; NJFIT: Future in Transportation, New Jersey; UnJAM 2025 and Places29, Virginia; and MetroVision and Blueprint Denver, Colorado. The paper also analyzes practices and lessons learned, highlighting common themes among the case studies.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2176, s 42-49, 2010

ISBN: 9780309160452

Effects of Transportation and Land Use Policies on Air Quality: A Case Study in Austin, Texas

McDonald-Buller, Elena C; Webb, Alba; Kockelman, Kara M; Zhou, Bin (Brenda)

http://dx.doi.org/10.3141/2158-04

The effects of land use and transportation policies on emissions, ozone concentrations, and a metric for population exposure were investigated for Austin, Texas. Three distinct transportation and land use scenarios were examined with a gravity-based land use model and a standard travel demand model: a business-as-usual scenario, a road pricing policy that included a flat-rate carbon-based tax and congestion pricing of all Austin-area freeways, and an urban growth boundary policy. Two scenarios, a business-as-usual scenario and a flat-rate carbon-based tax and congestion pricing policy, were also examined with a novel, parcel-level land use change and land use intensity model and a standard travel demand model. Transportation and land use policies were predicted to have substantial effects on travel and on emissions of ozone precursors. Emissions of ozone precursors decreased markedly for all 2030 scenarios because of the implementation of more stringent federal motor vehicle emission control programs. Transportation and land use policies were predicted to lead to greater reductions of emissions of ozone precursors relative to the business-as-usual scenario. The effects of such policies on ozone concentrations and population exposure vary. Lower exposure was predicted for the road pricing scenarios, but a penalty appeared to exist in the form of relatively higher exposure predicted for the urban growth boundary on some days. This analysis indicates the potential complexity of planning for urban growth and equity and the need for integrated modeling and policy evaluation efforts.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2158, s 28-35, 2010

ISBN: 9780309142847

Risk och nytta: kan man väga riskerna med stationsnära byggande mot samhällsnyttan

https://online4.ineko.se/trafikverket

Länsstyrelsen i Skåne har under 2009-2010 drivit ett projekt om stationsnära byggande. Syftet är att öka andelen järnvägstrafik i förhållande till biltrafiken. Härigenom kan andra samhällsvinster uppnås; färre olyckor, minskat koldioxidutsläpp, mindre trängsel på vägarna och kanske till och med en attraktivare stad. Denna skrift utgör ett särtryck från en länsstyrelsens stora rapport om stationsnära byggande.

Trafikverket Publikation 2010:074

Borlänge, 1,23 MB, 15 s, 2010

ISBN: 978-91-7467-047-9

Projektnamn: Projekt: Den Goda Staden

Index terms: Town planning, Residential area, Railway station, Rail bound transport, Vicinity, Location, Risk assessment
Ämnesord: Stadsplanering, Bostadsområden, Järnvägsstationer, Järnvägstransporter, Närområde, Läge, Riskanalys

Location-routing models and methods for freight distribution and infomobility in city logistics

Sterle, Claudio

http://www.cirrelt.ca/DocumentsTravail/CIRRELT-2010-38.pdf

Interuniversitary Research Centre on Enterprise Networks, Logistics and Transportation, CIRRELT.

CIRRELT-2010-38

Montreal, 212 s, 1,85 MB, 2010

Index terms: Delivery, Logistics, Route (itinerary), Urban area, Model (not math)
Ämnesord: Leverans, Logistik, Rutter, Tätorter, Modeller

Identifying strategic initiatives to promote urban sustainability

Weingaertner, Carina

Http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-27625

This thesis explores the overarching topic of the capacity of strategic urban development decisions and initiatives (including planning initiatives) to positively and powerfully influence the ability of a city to promote sustainable patterns of development. The work is presented in six scientific papers, the first four of which focus on the development of an inter-disciplinary conceptual framework and research methodology. The concept of Situations of Opportunity and its related Field of Options is proposed as a means to identify and analyse periods in the growth of cities when urbanisation can be more easily managed so as to promote sustainable development goals. Historical studies in the cities of Stockholm, Dar es Salaam and Curitiba are used to develop the methodology. Another paper looks ahead and refines the methodology in combination with future studies, presenting a research strategy that employs Situations of Opportunity as a means to identify and explore periods in the future urban growth with significant potential for change. Building on the method developed, the remaining two papers consider the social dimension of sustainable development and how it can be promoted in the urban context, during ongoing Situations of Opportunity. The concept of social sustainability is reviewed and discussed from two different disciplinary perspectives (urban development; companies and products), exploring commonalities and differences in approaches, and identifying core themes that cross disciplinary boundaries. A case study of Eastside, a brownfield redevelopment site in Birmingham (UK), reveals how the retention of established small food outlets can provide opportunities for promoting social sustainability goals in an urban regeneration area. Overall, this thesis provides a better understanding of how transformative change can happen in cities. The Situations of Opportunity concept developed here can be a helpful way to study strategic initiatives that promote sustainability in cities.

Kungliga tekniska högskolan. Institutionen för samhällsplanering och miljö TRITA-SoM 2010:18

Stockholm, 44 s + bil, 2010

ISBN: 978-91-7415-822-9

Index terms: Public transport, Urban area, Sustainability, Town planning, Social factors, Underground railway, Thesis
Ämnesord: Kollektivtrafik, Tätorter, Hållbar utveckling, Stadsplanering, Sociala faktorer, Tunnelbanor, Doktorsavhandling

Governing towards sustainability: environmental governance and policy change in Swedish forestry and transport

Hysing, Erik

http://urn.kb.se/resolve?urn=urn:nbn:se:oru:diva-9030

Faced with environmental problems such as climate change and biodiversity loss, the dominant political response has been sustainable development, balancing environmental protection against economic prosperity and social justice. While political action is increasingly being called for, the role and capacity of the state is questioned - as captured neatly in the story from government to governance that implies a relocation of authority and power between policy levels and in public-private relations, as well as a radical restructuring within public administration. Taking its conceptual point of departure in theories of sustainable development, governance, and policy change, this thesis assesses, explains, and theorises about recent developments of environmental governing within Swedish forestry and transport, two areas with high environmental impact and that involve strong economic values and interests. The findings are presented in four articles that have all been published in leading academic journals. The thesis concludes that public policy has changed within both policy areas as environmental objectives and new modes of governing have been adopted - a development that can be characterised as governing towards sustainability. However, the storyline from government to governance is too simple to capture these changes. The state remains important in several ways (actor, arena, institutional structure, form of authority) and influences society through a variety of modes of governing. Thus, governance and government remain relevant. To explain policy change we need to recognise multiple barriers to and enablers of change as well as having a contextual understanding of the policy area in focus. The thesis concludes by arguing that sustainable development needs to be politicised in terms of visible political action and open political contestation between differing visions of a sustainable society.

Örebro University Örebro studies in political science 27 1650-1632

Örebro, 104 s + bil (75 s), 2010

ISBN: 978-91-7668-712-3

Index terms: Government (national), Local authority, Policy, Planning, Town planning, Traffic, Transport, Environment protection, Sustainability, Thesis
Ämnesord: Regering, Kommunalförvaltning, Policy, Planering, Stadsplanering, Trafik, Transporter, Miljöskydd, Hållbar utveckling, Doktorsavhandling

Vårt uppdrag är utveckling: hållbar utveckling och regional tillväxt

Asplund, Eva; Hilding-Rydevik, Tuija; Håkansson, Maria; Skantze, Ann

Denna bok handlar om detta ”uppenbara bekymmer i samhället” som är ursprunget till den svenska regeringens politik för hållbar utveckling. De aktuella globala klimatförändringarna och den ekonomiska utvecklingen förstärker behovet av en politik och praktik för hållbar utveckling - ekonomiskt, socialt och miljömässigt.; Boken handlar specifikt om erfarenheterna av några regioners ansträngningar att omsätta hållbar utveckling inom ramen för regionalt tillväxtarbete. Resultaten är dock av relevans för andra organisationer som brottas med att integrera t ex miljöfrågor i sin organisation.; Syftet med boken är att inspirera till kritisk reflektion och diskussion vilket utgör en avgörande grund för förändring och lärande. I grunden handlar boken om vad arbetet med regional utveckling och tillväxt är och kan vara samt vilken roll hållbar utveckling spelar i det sammanhanget.; Boken har tagits fram som ett av flera resultat av forskningsprojekt i samarbete mellan forskare från Sveriges lantbruksuniversitet, Kungliga Tekniska högskolan och Linköpings universitet och Nordregio.

Sveriges lantbruksuniversitet, SLU. Institutionen för stad och land Rapporter Institutionen för stad och land 2010:2 1654-0565

Uppsala, 107 s, 2010

ISBN: 978-91-85735-20-4

Index terms: Sustainability, Development, Planning, Regional planning, Increase
Ämnesord: Hållbar utveckling, Utveckling, Planering, Regional planering, Ökning

The role of walking and cycling in advancing healthy and sustainable urban areas

Tight, Miles (eds.); Givoni, Moshe (eds.)

http://dx.doi.org/10.2148/benv.36.4.385

This special issue focuses on about how we might change urban areas to create healthier and more sustainable futures. It considers what we need to know about walking and cycling to understand their importance; the evidence for what works and how much change might be possible and over what timescales; as well as the benefits from such a change.

Built environment

Marcham, volym:36 nr: 4, s 385-390, 199,49 kB, 2010

Index terms: Walking, Cycling, Improvement , Urban area, Town planning, Mobility management, Sustainability, Health

Kommuners trafikstrategier och användning av hållbarhetsindikatorer

Otto, Therese

http://lup.lub.lu.se/luur/download%3Ffunc%3DdownloadFile%26recordOId%3D1686906%26fileOId%3D1686908

Within the framework of HASTA, a systematic study was conducted about Swedish municipalities' traffic strategies and use of sustainability indicators to follow up the work on a sustainable transport system. This report analyzes the work of the municipalities with a traffic strategy in order to examine if the municipalities use sustainability indicators or not. Furthermore, the report analyzes in which areas and to what extent sustainability indicators are used by the different municipalities. Moreover, other studies which have been conducted in Sweden are analyzed in order to verify the results from this report. In this report it became clear that there are only a few municipalities in Sweden which have a traffic strategy and even less that use sustainability indicators. Additionally, there is a large variation between the municipalities when it comes to the number of indicators used. Furthermore, there seems to be a lack of understanding of what the word indicator means, given that the municipalities use the word in different ways and mean different things. It seems to be necessary to coordinate the work with sustainability indicators and to clarify the meaning of the word sustainability indicator.

Lunds universitet. Tekniska högskolan. Teknik och samhälle. Trafik och väg. Bulletin 255

Lund, 584 kB, 46 s, 2010

Index terms: Mobility management
Ämnesord: Mobility management

Erfaring med handelsanalyser i Framtidens byer

Tennøy, Aud; Loftsgarden, Tanja; Usterud Hanssen, Jan; Strand, Arvid

http://www.toi.no/getfile.php/Publikasjoner/T%D8I%20rapporter/2010/1071-2010/1071-2010-elektronisk.pdf

Siktemålet med prosjektet er å framskaffe bedre kunnskap for beslutninger om lokalisering av handel. Sentrale spørsmål er: Hvordan håndteres utbyggingsplaner for handel i de større byområder i dag? Hvilke analyser gjennomføres og hvor beslutningsrelevant kunnskap får en fra disse analysene? Det er gjennomført telefoniske intervjuer med sentrale personer innenfor planlegging og utvikling av handel i hver av de tretten planetatene i kommunene i Framtidens byer. Intervjuene har gitt en oversikt over hvilke dokumenter de ulike byene har utarbeidet vedrørende lokalisering av handel og annet materiale som er tilgjengelig. Deretter er det for noen av byene gått nærmere inn i dette materialet for å kunne redegjøre mer presist om variasjoner i framgangsmåter - og om mer eller mindre vellykkede framgangsmåter - i arbeidet med å styre lokalisering og dimensjonering av handel. Det er også, som en tilleggsundersøkelse, foretatt en gjennomgang av hva kommuneplanene sier om handelsetablering i løpende tekst, bestemmelser og retningslinjer.; Sammendrag: http://www.toi.no/getfile.php/Publikasjoner/T%D8I%20rapporter/2010/1071-2010/sam-1071-2010.pdf

Transportøkonomisk institutt, (TØI) TØI rapport 1071 0808-1190

Oslo, 100 s, 1,52 MB, 2010

ISBN: Pappersversion: 978-82-480-1091-3, Elektroniskversion:

978-82-480-1078-4

Index terms: Shopping centre, Location, Town planning, Land use

Indikatorer for miljøvennlig logistikk

Andersen, Jardar; Eidhammer, Olav

http://www.toi.no/getfile.php/Publikasjoner/T%D8I%20rapporter/2010/1072-2010/1072-2010-el.pdf

Development of indicators may contribute to the identification of problem areas and best practies, which in turn may lay the ground for improved measures targeted at environmental policy goals. We present a set of indicators for environmentally friendly logistics in general, and a set for environmentally friendly city logistics. A subset of the suggested indicators are quantified by use of statistics, both at the national level and the city level. The indicator set may be used for comparisons of cities or for studies of development over time, at the national level or the city level.

Transportøkonomisk institutt, (TØI) TØI rapport 1072 0808-1190

Oslo, 55 s, 687,91 kB, 2010

ISBN: Pappersversion: 978-82-480-1081, Elektroniskversion:

978-480-1080-7

Index terms: Freight transport, Sustainability, Environment protection, Measurement, Statistics, Urban area

Ideskrift för samordnad varudistribution

http://www.transportportal.se/PDFStore/VV/2010-04-15-2010_8_ideskrift_for_samordnad_varudistribution.pdf

I idéskriften presenteras resultatet av en studie av genomförda samdistributionsprojekt i Sverige. Målet med studien var att finna kritiska faktorer som avgör om ett samdistributionsprojekt lyckas. Skriften ger även en kortfattad introduktion till begreppet samdistribution och effekterna av genomförda samdistributionsprojekt. Idéskriften kan till exempel användas av kommuner, företag och andra organisationer som är intresserade av samdistribution.

Vägverket. Publikation 2010:008

Borlänge, 0,24 MB, 16 s, 2010

Index terms: Delivery, Urban area, Logistics, Sustainability, Freight transport, Planning, Management, Specifications
Ämnesord: Leverans, Tätorter, Logistik, Hållbar utveckling, Godstransporter, Planering, Ledning och organisation, Riktlinjer

Stadsplanera för ett hållbart resande: en studie om buss- och bilresor baserad på resvanor i Lund och Helsingborg

Janzon, Stina; Josefsson, Anna-Karin

http://www.tft.lth.se/fileadmin/tft/dok/publ/5000/thesis199_J-J_scr.pdf

Lunds universitet. Tekniska högskolan. Teknik och samhälle. Trafik och väg. Thesis 199

Lund, 78 s, 3,69 MB, 2010

Index terms: Journey, Behaviour, Modal choice, Urban area, Bus, Car, Journey time, Modal split, Public transport, Private transport, Town planning, Statistical analysis

Bebyggelselokaliseringens betydelse för koldioxidutsläpp och tillgänglighet

http://fudinfo.trafikverket.se/fudinfoexternwebb/Pages/PublikationVisa.aspx?PublikationId=1607

denna rapport redovisar WSP sin del av ett forskningsprojekt som bedrivits tillsammans med Chalmers: Bebyggelseplaneringens betydelse för utsläpp och tillgänglighet på lokal och regional nivå. Rapporten behandlar den regionala nivån i tre delar:; - Utvärdering av olika målbilder för bebyggelselokalisering: den ”monocentriska staden”, den ”utspridda staden” och ”stationssamhällen”. Utvärderingen avser främst utsläpp och tillgänglighet.; - Analys av möjligheterna att uppnå en önskad målbild genom planering. Vad ger den nuvarande processen för incitament? Vilken lagstiftning , processer m m ger den stöd? Vad motverkar den?; - Analys av möjligheterna att uppnå en önskad målbild genom ekonomiska styrmedel. Vi analyserar differentierade VA-avgifter (som gör det dyrare att bo i perifera lägen), höjd bränsleskatt och slopat reseavdrag.; Resultaten visar att bebyggelsens alternativa lokalisering till år 2050 påverkar koldioxidutsläppen från trafiken med i storleksordningen 10-15%, beroende på de regionala förutsättningarna. ”Den monocentriska staden” ger minst utsläpp, följt av ”stationssamhällen” och sist ”den utspridda staden”. Exempel på varför det är så är att skillnaden i utsläpp mellan de olika målbilderna är större i Skåne än i Stockholm. Skåne har redan i dag drag av målbilden ”stationssamhällen”.

WSP Analys & Strategi

Stockholm, 86 s, 2011

Index terms: Urban area, Urban development, Land use, Design (overall design), Density, Journey to work, Emission, Carbon dioxide, Forecast, Calculation
Ämnesord: Tätorter, Stadsutveckling, Markanvändning, Design, Täthet, Arbetsresor, Emissioner, Koldioxid, Prognoser, Beräkning

Bebyggelselokaliseringens betydelse för koldioxidutsläpp och tillgänglighet: förstudier

http://fudinfo.trafikverket.se/fudinfoexternwebb/Pages/PublikationVisa.aspx?PublikationId=1606

WSP har, med finansiering av Trafikverket, bedrivit ett forskningsprojekt om bebyggelseplanering tillsammans med Chalmers. Projektets titel: Bebyggelseplaneringens betydelse för utsläpp och tillgänglighet på lokal och regional nivå. Chalmers del behandlar den lokala nivån och syftar till att värdera hur de två dominerande trenderna förtätning/funktionsblandning respektive utglesning/funktionsuppdelning påverkar kollektivtrafikens, gångtrafikens och cykeltrafikens andel av resorna. I denna rapport redovisas tre stycken ”förstudier” som har legat till grund för analyserna. Varje förstudie ser till aspekt som normalt inte analyseras så grundligt eller”passar in” i bebyggelseplanering på regional nivå. I kapitel två redovisas en studie om människors boendepreferenser. Vi har valt att studera detta djupare då regional planering ofta är deterministisk till sin karaktär. I kapitel tre redovisas en studie om hur socioekonomiska faktorer kan beaktas i regional planering. I kapitel fyra en studie om utsläppen från bebyggelsen är något att beakta i regional planering.

WSP Analys & Strategi

Stockholm, 34 s, 2011

Index terms: Regional planning, Urban development, Social factors, Accessibility, Energy consumption, Carbon dioxide, Emission
Ämnesord: Regional planering, Stadsutveckling, Sociala faktorer, Tillgänglighet, Energiförbrukning, Koldioxid, Emissioner

Cykelstaden: en idéskrift om stadsplanering för mainstreamcyklistens återkomst

Jägerhök, Tove; Kihlborg, Lovisa; Nordström, Tobias

http://www.spacescape.se/pdf/Cykelstaden_rapport_111107_mindre.pdf

Målsättningen med detta forsknings- och utvecklingsprojekt har varit att sammanställa en bred kunskapsplattform med referenser till både transport-, folkhälso- och stadsbyggnadsforskning, med syfte att utveckla idéer om hur en cykelstad för alla kan utvecklas, en cykelstad som på allvar underlättar för alla grupper i samhället att cykla till vardags. Behovet av cykelstaden är stort från ett samhälleligt perspektiv men trenden går idag också mot en allt större efterfrågan från stadsborna själva. Cykelstaden är inte bara förenlig med bättre folkhälsa utan kan lika väl i det framväxande kunskapssamhället ses som ett medel för att öka städernas konkurrenskraft och möjlighet att attrahera arbetskraft och därigenom fler företag. Rapporten vänder sig främst till arkitekter och trafikplanerare.; Alternativ URL: http://www.white.se/system/resources/BAhbBlsHOgZmSSJCMjAxMi8wNS8yMS8wOS81Mi8zMC8zNjkvQ3lrZWxzdGFkZW5fcmFwcG9ydF8xMTExMDdfbWluZHJlLnBkZgY6BkVU/Cykelstaden_rapport_111107_mindre.pdf

White arkitekter AB

Spacescape AB

ARQ

VINNOVA

Stockholm, 96 s, 7,72 MB, 2011

Index terms: Cycling, Town planning, Specifications
Ämnesord: Cykling, Stadsplanering, Riktlinjer

Hög prioritet för gång-och cykeltrafik i samhällsplaneringen: hinder och framgångsfaktorer

Wennberg, Hanna; Nordlund, Jesper

http://www.trivector.se/fileadmin/uploads/Traffic/Rapporter/2011_94_HMSkane_GC_i_planer_v1_1.pdf

Gång och cykel har stor potential i tätorter och som idag till stor del är outnyttjad, inte minst när det gäller att föra över korta bilresor i tätort. Transportpolitikens funktionsmål om tillgänglighet innebär att förutsättningarna för att välja kollektiv-trafik, gång och cykel ska förbättras. Att skapa bättre förutsättningar för gång-och cykeltrafik har också strategisk betydelse för utvecklingen av kollektivtrafiken. För att driva denna utveckling framåt behövs ökad kunskap om hur arbetet med att ge gång-och cykeltrafik hög prioritet i den kommunala samhällsplaneringen kan utvecklas. Syftet med denna studie är att undersöka i vilken grad gång-och cykeltrafiken prioriteras i planeringen och vad som påverkar prioriteringen samt att identifiera hinder och framgångsfaktorer i detta arbete. Detta genomförs genom fallstudier i två skånska kommuner med en aktiv planering för, och hög färdmedelsandel av, gång och cykel: Malmö stad och Lunds kommun. I fallstudierna görs granskning av översiktsplan och strategiska dokument samt av detaljplaner (med tillhörande fördjupning av översiktsplanen och/eller planprogram) och intervjuer med trafikplanerare, trafikingenjörer och planarkitekter i kommunen. Slutligen ges råd för en bättre prioritering av gång-och cykeltrafiken i planeringen.

Trivector Traffic Rapport 2011:94

Lund, 89 s, 4,92 MB, 2011

Index terms: Cycling, Walking, Cycle track, Footway, Town planning
Ämnesord: Cykling, Gång, Cykelbanor, Gångvägar, Stadsplanering

Hållbara besöksresor till köpcentra: förslag på strategier i Skåne

Ljungberg, Caroline; Smidfelt Rosqvist, Lena; Clark, Anna

http://hmskane.se/doc/hallbara_besoksresor_till_kopcentra.pdf

Handeln i Sverige lokaliseras ofta utanför stadskärnorna, i så kallade externa köpcentra. Besöksresandet till dessa köpcentra är stort och bygger på individuellt resande med bil. Detta medför att tillgängligheten till en ökad andel avhandeln kräverbil. Detta gäller även i de fall då de ligger i så kallade halvexterna lägen. Från tidigare studier står det klart att det trots allt finns skillnad för hur resandet till och från köpcentra med olika förutsättningar och planering fördelas på olika trafikslag. Syftet med föreliggande studie är en kartläggning och analys av köpcentra i Skåne med för att föreslå strategier som kan bidra till ett mer hållbart besöksresande till dessa utifrån deras olika förutsättningar. Det som har betydelse för hur vi reser är bl.a. lokaliseringen, transportutbudet samt beteende och attityder. Möjligheterna till konkurrenskraftigt utbud och standard av hållbara färdsätt påverkas inte bara av fysisk planering utan kan även regleras direkt och indirekt via lagstiftning och avgifter. Rapporten beskriver inledande hur vi gör inköpsresor idag och vilka faktorer som påverkar dessa val. Skånes köpcentra delas också in efter de förutsättningar de har för ett ökat hållbart resande. Därefter beskrivs trender och åtgärder för att bidra till fler hållbara besöksresor. Slutligen presenteras olika strategier med konkreta åtgärder för olika aktörer och med olika tidshorisonter. Dels för hur nuläget 2012 kan hanteras, hur strategier i det korta perspektivet (ca 5år)ser ut och också strategier för det något längre perspektivet (för målår 2030).

Trivector Traffic Rapport 2011:111

Lund, 71 s, 1,91 MB, 2011

Index terms: Shopping centre, Journey, Sustainable transport, Town planning, Traffic restraint
Ämnesord: Köpcentrum, Resor, Hållbara transporter, Stadsplanering, Trafikbegränsning

Nya vägar för kollektivtrafiken: en kunskapsöversikt

Bjerkemo, Sven-Allan

http://kth.diva-portal.org/smash/record.jsf?searchId=1&pid=diva2:463406

Behovet av övergripande strategier som styr bebyggelseutveckling och trafikplanering med kollektivtrafiken som norm är stort. Sedan 1960-talet har planeringen främjat samhällsbildningar där bilens framkomlighet prioriterats. Syftet med denna kunskapsöversikt är att ge en systematisk kunskapsuppbyggnad och tillämpning av metoder byggda på 'best practice'. Kunskapsöversikten har som syfte att stödja kommuner genom att med konkreta exempel från olika städer i Sverige och Europa i övrigt belysa hur kommunerna medvetet kan planera för kollektivtrafik.; Forskningsprojektet Kollektivtrafiken i kommunernas planering tillkom mot ovanstående bakgrund. KTH Samhällsplanering och miljö beviljades medel av Vinnova, inom ramen för myndighetens program Framtidens personresor, att genomföra en studie i de tre kommunerna Karlstad, Sundsvall och Uppsala som alla arbetade med att förnya och effektivisera sin kollektivtrafik. Denna rapport har varit ett stöd i de tre kommunernas; planeringsprocesser men har också en självständig roll som en lättillgänglig redovisning av kunskapsläget.

Kungliga tekniska högskolan. Institutionen för samhällsplanering och miljö. TRITA-SoM 2011-11 1653-6126

Forskningsprogrammet Stadsregioner och utvecklingskraft (STOUT) Rapport 2/2011 1654-2754

Stockholm, 42 s + bil (37 s), 9,53 MB, 2011

ISBN: 978-91-7501-077-9

Index terms: Public transport, Increase, Improvement, Method, Local authority, Regional planning, Policy, Legislation
Ämnesord: Kollektivtrafik, Ökning, Förbättring, Metoder, Kommunalförvaltning, Regional planering, Policy, Lagstiftning

Hållbara intermodala transporter av dagligvaror: godsflödeskartläggning

Jensen, Janni; Bark, Peter; Storhagen, Nils G

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001501_001600/Publikation_001557/TFK%20H%c3%a5llbara%20intermodala%20transporter%20av%20dagligvaror%20%e2%80%93%20godsfl%c3%b6deskartl%c3%a4ggning.pdf

TFK inledde under 2007 ett forskningssamarbete med dagligvarubranschen, vilka företräddes av Coop, Dagab och ICA. En avsikt var att kartlägga samt skapa klarhet i vilka förutsättningar och möjligheter som fanns för att öka andelen intermodala transporter av dagligvaror samt att identifiera behov av fördjupad forskning på området. En stor strukturell förändring hade skett under 20 år och medfört att antalet distributionsanläggningar, terminaler och andra brytpunkter hos dagligvaruhandelns grossistföretag hade minskat väsentligt. I en inledande studie noterades; att andelen dagligvarutransporter på järnväg hade minskat under lång tid trots att en koncentration av verksamheten borde ha gynnat storskaliga och förmodat långsiktigt hållbara transportslag såsom järnvägstransporter. Den inledande studien visade att branschgemensamma intermodala transportlösningar var av intresse för dagligvaruhandeln men att organisatoriska och tekniska hinder och barriärer måste övervinnas innan dessa var möjliga att genomföra.

TFK - TransportForsK TFK rapport 2011:5

Stockholm, 48 s, 1,23 MB, 2011

ISBN: 978-91-856665-47-1

Index terms: Freight transport, Intermodal transport (freight), Logistics, Freight, Transport mode, Lorry, Train, Freight terminal
Ämnesord: Godstransporter, Intermodala transporter, Logistik, Gods, Transportslag, Lastbilar, Tåg, Godsterminaler

Making sense of integrated planning: challenges to urban and transport planning processes in Sweden

Tornberg, Patrik

http://kth.diva-portal.org/smash/record.jsf?searchId=1&pid=diva2:459001

The shaping of spatial structures at the urban, regional and national levels involves numerous kinds of actors and planning activities. In recent years, calls for crosssectoral coordination and integrated planning approaches echo extensively across different fields of planning. However, experiences from planning situations around Sweden and elsewhere reveal great challenges to such ambitions. This thesis explores key conditions for an integrated approach to urban and transport planning, focusing on the relationships between public professional actors and agencies involved in the interface between urban and transport planning and strategy making, at the local and national level in Sweden. The theoretical framework is based on communicative planning theory and theories on sensemaking.; The empirical material emanates from the project The Livable City, a collaboration project between three Swedish municipalities and national authorities responsible for transport and urban planning in Sweden. The aim of The Livable City was to develop knowledge about integrated planning of the built environment and transport systems and to develop integrated processes for coordination of different interests, demands and needs. Case studies were conducted, based on document studies, interviews and observations.; The results from this study illustrate various aspects of how plans and strategies in a multiperspective environment need to make sense to actors with different perspectives on what planning is all about. A sensemaking perspective on planning suggests that plans and strategies to promote an integrated approach to planning will always be partial and selective despite ambitions for these to be comprehensive or holistic. Commitment, reification and participation have in the cases proven to be useful concepts to understand the sensemaking aspect of planning practice. Interactive processes may inform the shaping of perspectives and can therefore be an element in efforts to promote integrated approaches to urban and transport planning, although the extent to which this may be achieved is highly dependent on contextual conditions and will vary from case to case.

Kungliga tekniska högskolan. Institutionen för samhällsplanering och miljö Trita-SOM 2011:18 1653-6126

Stockholm, 72 s, 1,23 MB, 2011

ISBN: 978-91-7501-171-4

Index terms: Transport, Land use, Land use planning, Town planning, Policy, Decision process, Administration, Government (national), Organization (association), Thesis
Ämnesord: Transporter, Markanvändning, Stadsplanering, Policy, Beslutsfattande, Administration, Regering, Organisationer, Doktorsavhandling

Urban freight transport sustainability: the interaction of urban freight and intermodal transport

Behrends, Sönke

http://publications.lib.chalmers.se/records/fulltext/150735.pdf

Intermodal road-rail transport (IRRT) has a significant urban dimension that affects the environmental benefits and the modal shift potential of rail freight. A sustainable modal shift, i.e., growth in rail freight without negative consequences for the sustainability of urban areas, can only be achieved by appropriate actions that demonstrate an understanding of the urban context within which IRRT takes place. The purpose of this thesis is to explore the interactions between urban freight transport and IRRT and their implications for urban sustainability and modal shift strategies.; This research combines empirical case studies to develop a framework for sustainable urban freight transport, and conceptual and analytical research to assess the potential of different measures to enhance the sustainability of IRRT, including: (i) the regulatory framework for pre- and post haulage vehicles to improve cost efficiency; (ii) fast and efficient transhipments to increase the accessibility of rail freight; and (iii) the urban spatial structure to reduce the local impacts of IRRT. The application of the framework on IRRT identifies the potential of integrating urban freight and modal shift strategies. Local authorities therefore have an important role to play if a sustainable modal shift is to be achieved. However, they often do not have sufficient logistics competence to integrate freight transport and urban sustainability strategies. The framework can guide urban planners on how to overcome the existing shortcomings in urban transport planning. It also illustrates the benefits of a rail-adapted urban planning for local sustainability, which can encourage cities to include rail freight in their sustainable development strategies. From a theoretical perspective, the identified interactions and potentials of an integrated approach provide the context for studies going beyond the usual scope of either urban freight or IRRT focusing on the interaction between these two areas. This thesis therefore contributes to the integration of these streams of research.

Chalmers University of Technology. Department of Technology Management and Economics
Doktorsavhandlingar vid Chalmers tekniska högskola. Ny serie 3308 0346-718X

Göteborg, 96 s, 2,05 MB, 2011

ISBN: 978-91-7385-627-0

Index terms: Freight transport, Intermodal transport (freight), Freight terminal, Logistics, Planning, Urban area, Sustainability, Town planning, Land use, Thesis
Ämnesord: Godstransporter, Intermodala transporter, Godsterminaler, Logistik, Planering, Tätorter, Hållbar utveckling, Stadsplanering, Markanvändning, Doktorsavhandling

Pathways to a renewable road transport system in Stockholm 2030

Hjalmarsson, Linnea; Larsson, Mårten; Olsson, Linda; Wikström, Martina

http://liu.diva-portal.org/smash/record.jsf?pid=diva2:505634

In order to mitigate global climate change, anthropogenic emissions of fossil carbon dioxide (CO2) need to be cut drastically. Road transport is a major source of CO2 emissions, and in urban areas road transport also involves problems such as congestion, noise and particle emissions. Stockholm, the Swedish capital and one of the busiest regions in Sweden, has the ambition to be a pioneer in addressing environmental problems; CO2 emissions in particular. One of the political visions incorporated in Stockholm's environmental work is to achieve a practically renewable transport system by 2030. This study investigates if there are favourable conditions to achieve a renewable road transport system in Stockholm by 2030. Three aspects are considered; technology, private economy and regional planning policy. The study is based on three sub-studies, one for each aspect, and conclusions are drawn from the integration of the sub-studies. A scenario assessment implies that the technology to transit to a completely renewable road transport system could exist, and that a mix of technologies would be preferable. Cost optimisations show that renewable fuels and electric vehicles are cost-competitive given certain incentives. Hence, private persons could shift their transportation choices towards alternative vehicles and fuels. Interviews with regional institutional actors and analysis of regional planning documents reveal that integrating energy and transport systems in planning policy could enable the transition to a renewable road transport system in Stockholm. The work has been carried out under the auspices of The Energy Systems Programme (primarily financed by The Swedish Energy Agency).; The study concludes that favourable conditions for a renewable road transport system do exist. However, the main challenge is to coordinate the simultaneous implementation of necessary measures and the study shows that this is best organised at a regional level.

Linköpings universitet, Institutionen för ekonomisk och industriell utveckling, Energisystem
Arbetsnotat 48 1403-8307

Linköping, 124 s, 3,89 MB, 2011

Index terms: Biogas, Alternative energy, Fuel, Sustainability, Environment protection, Regional planning, Policy
Ämnesord: Biogas, Förnybara energikällor, Bränsle, Hållbar utveckling, Miljöskydd, Regional planering, Policy

Samfunnsøkonomiske vurderinger av godsbilstørrelser i bysentrum

Eidhammer, Olav; Andersen, Jardar; Wøhlk, Michael; Sørensen, Jaeger

https://www.toi.no/getfile.php/Publikasjoner/T%D8I%20rapporter/2011/1182-2011/1182-2011-elektronisk.pdf

Europa og Norge kjennetegnes for tiden av økt urbanisering noe som øker behovet for vareleveranser i byområder. I studien har vi utarbeidet og testet et analyseverktøy som gjør det mulig å utlede hva som er samfunns-økonomisk optimale størrelser for distribusjonsbiler til bruk i norske bysentrum og å måle den samfunnsøkonomiske effekten av å harmonisere dimensjoner på innkjørings- og biloppstillingsplasser ved varemottak med de bilene som brukes til varedistribusjon i byer. Vi har studert to hovedtiltak med data for leveranser innenfor Ring 2 i Oslo. Tiltakene er (1) redusert tillatt størrelse på godsbiler, og (2) økte krav til dimensjoner for varemottak. Ifølge våre beregninger og forutsetninger gir ett av tiltakene (Göteborgalternativet) en positiv effekt, men usikkerheten knyttet til resultatet er betydelig på grunn av mangel på gode data.

Transportøkonomisk institutt, (TØI) TØI rapport 1182/2011 0808-1190

Oslo, 72 s, 1,04 MB, 2011

ISBN: Pappersversion: 978-82-480-1298-69788248013037,

Elektronisk version: 978-82-480-1298-6

Index terms: Delivery, Logistics, Urban area, Freight transport, Cost benefit analysis
Ämnesord: Leverans, Logistik, Tätorter, Godstransporter, Nyttokostnadsanalys

How to deal with the complexity of urban transport: an overview

Wittlöv, Arne

http://www.vref.se/download/18.5a77b0b513540402a9cc5a/vref_10years_low.pdf

This book presents a snapshot of a decade of work under the FUT programme and examples of how results have infl uenced the development urban transport in practice. The cases cover themes of fundamental importance: Policy Development, Urban Transport Planning, Public Transport and Non-Motorized Transport. How research has been able to infl uence the development of urban transport is an overarching theme found in all of the chapters.

Volvo Research and Educational Foundations, VREF

Göteborg, S. 12-21, 2011

Övrig info: Paper no. 1 in: ”10 years with the FUT programme”, Future

Urban Transport

Index terms: Transport, Public transport, Bus, Rapid transit system, Town planning, Urbanisation, Sustainability, Urban area, Developing countries
Ämnesord: Transporter, Kollektivtrafik, Bussar, Stadsplanering, Urbanisering, Hållbar utveckling, Tätorter, Utvecklingsländer

Developing strategic policy networks to achieve change

Klopp, Jacqueline; Sclar, Elliot

http://www.vref.se/download/18.5a77b0b513540402a9cc5a/vref_10years_low.pdf

Creating effective transport and land-use; policy in rapidly-urbanizing cities is a; universally-recognized and urgent problem.; Effective policy creation is typically given; second priority by academic experts more adept; at problem diagnostics than understanding; effective policy implementation dynamics. Using; the experience of Nairobi, we demonstrate the; development and application of strategic policy; networks to leverage expertise for improved; planning implementation.

Volvo Research and Educational Foundations, VREF

Göteborg, S. 32-43, 2011

Övrig info: Paper no. 3 in: ”10 years with the FUT programme”, Future

Urban Transport

Index terms: Transport, Urban area, Town planning, Land use, Sustainability, Kenya, Developing countries
Ämnesord: Transporter, Tätorter, Stadsplanering, Markanvändning, Hållbar utveckling, Kenya, Utvecklingsländer

Urban transport governance for a low-carbon future

http://www.vref.se/download/18.5a77b0b513540402a9cc5a/vref_10years_low.pdf

This chapter explores some of the implications,; using a research method developed at the; Centre. The Centre's main research themes; are transportation sustainability analysis,; governance practices to support sustainability,; and governance analysis in different national and; local contexts. We outline a research initiative; within this programme, demonstrating a new way; of assessing access to public transport, and show; how this model was used in considering the best; site for a new sports stadium on Queensland's; Gold Coast.

Volvo Research and Educational Foundations, VREF

Göteborg, S. 58-67, 2011

Övrig info: Paper no. 5 in: "10 years with the FUT programme", Future

Urban Transport

Index terms: Town planning, Transport, Sustainability, Building (structure), Special event, Location
Ämnesord: Stadsplanering, Transporter, Hållbar utveckling, Byggnader, Evenemang, Läge

Omvärldsanalys av regionala cykelstrategier

http://www.tmr.sll.se/Global/SATSA-projektet/Dokument/Regional_cykelstrategi/Omv%c3%a4rldsanalys%20av%20regionala%20cykelstrategier_20110512.pdf

Uppdraget avser ett av delprojekten – Regional cykelstrategi – inom det EUfinansierade projektet SATSA II – Samverkan för effektivt transportsystem i Stockholmsregionen. Delprojektet bedrivs under åren 2010-2012 i samarbete mellan Trafikverket, Regionplanekontoret, Länsstyrelsen och Storstockholms Lokaltrafik. Trafikverket är huvudansvarig. Regeringen har angett att cykeltrafiken ska öka som andel av det totala resandet. Cyklingen behöver öka för bättre framkomlighet, klimat och hälsa. Syftet med projektet Regional cykelstrategi är att ta ett helhetsgrepp kring cykelfrågan och öka samsynen aktörer emellan. Projektet kommer att bidra till en nödvändig kunskapshöjning om behovet av nya cykelvägar och standard samt kapacitet i befintliga stråk. Den regionala cykelplanen kommer utgöra en gemensam grund och prioritering för framtida investeringar och inriktning för utvecklingen av cykelstråken. Projektet ska göra en inventering av cykelstråken, revidera det utpekade; nätet av regionala cykelstråk (cykelstråk för arbetspendling) och parallellt med detta ska en regional cykelplan arbetas fram. Den regionala cykelstrategin ska även behandla hur kollektivtrafik och cykel kan samordnas på ett bättre sätt. Utöver detta ska rekreations- och fritidscyklismen ingå. Den regionala cykelplanen kommer att utgöra en gemensam grund för framtida investeringar och inriktning för utveckling av stråken med tillhörande objektbeskrivningar. Inventeringarna kommer också att bidra till att omfattande kartmaterial tas fram, underlag till bland annat digitala reseplanerare för cykel. Denna rapport avser en omvärldsanalys inför starten av Projektet Regional cykelstrategi. Syftet med omvärldsanalysen är att få en kunskapshöjning och erfarenheter från liknande arbeten runt om i världen och i andra delar av Sverige. Resultatet av analysen ska inspirera och fungera som goda exempel för upplägg och innehåll i projektet Regional cykelstrategi.

Europeiska unionen. Europeiska regionala utvecklingsfonden R 2010-219

Stockholm, 38 s, 502,03 kB, 2011

Projektnamn: SATSA- Samverkan för effektivt transportsystem i

Stockholmsregionen

Index terms: Cycling, Cycle track, Improvement, Increase, Method, Planning, Regional planning, Campaign
Ämnesord: Cykling, Cykelbanor, Förbättring, Ökning, Metoder, Planering, Regional planering, Kampanjer

SATSA 1.1: Handlingsprogram Effektiv Trafik Regionalt samverkansprogram för effektiv trafik: samverkansprojekt inom trafikområdet i Stockholmsregionen - erfarenheter och framgångsfaktorer

Widell, Jenny; Stjärnekull, Michael; Karlsson, Marie

http://www.tmr.sll.se/Global/SATSA-projektet/Dokument/1_1/SATSA%201.1_Rapport%20Samverkansprojekt%20inom%20trafikomr%c3%a5det_framg%c3%a5ngsfaktorer.pdf

Trafikverket, Länsstyrelsen i Stockholms län, Regionplanekontoret vid Stockholms läns landsting, Storstockholms Lokaltrafik och Stockholms stad samarbetar i EU:s strukturfondsprojekt SATSA – samverkan för effektivt transportsystem i Stock-holmsregionen. Det övergripande målet är stärkt samverkan mellan parterna och effektivisering av transportsystemet i Stockholms län.; Syftet med denna studie som sker SATSA:s delprojekt ”Regionalt samverkansprogram för effektiv trafik” är målsättningen att kartlägga och beskriva Stockholmsre-gionens olika aktörers erfarenheter av olika arbetssätt för att förbättra trafiksituationen. Syftet är att ur dessa erfarenheter lyfta fram framgångsfaktorer till processen med att forma ett program för ett effektivare arbete med trafiken i Stock-holmsregionen. Fokus ligger på riktade projekt och nätverkssamarbeten för steg 1- 3-åtgärder.

Sweco

Stockholm, 38 s, 853,37 kB, 2011

Projektnamn: EU: SATSA, Samverkan för effektivt transportsystem i

Stockholmsregionen

Index terms: Transport infrastructure, Regional planning
Ämnesord: Transportinfrastruktur, Regional planering

SATSA 1.1 Samverkansprogram Effektiv Trafik: Kombinationer av effektiva åtgärder och deras samlade effekter

http://www.tmr.sll.se/Global/SATSA-projektet/Dokument/1_1/SATSA1.1_Samlade_effekter_av_kombinerade_atgarder.pdf

Trafikverket, Länsstyrelsen i Stockholms län, Regionplanekontoret vid Stockholms läns landsting, Storstockholms Lokaltrafik och Stockholms stad samarbetar i EU:s strukturfondsprojekt SATSA – samverkan för effektivt transportsystem i Stockholmsregionen. Det övergripande målet är att stärka samverkan mellan parterna och effektivisera transportsystemet i Stockholms län. I en förstudie har man konstaterat att aktörerna iStockholmsregionen gemensamt behöver öka kunskapen om olika kombinationer av åtgärder av typ steg 1-3 enligt fyrstegsprincipen och vilka effekter de kan få om man sätter samman dem i olika åtgärdspaket. Det finns många möjliga åtgärder att välja mellan och många sätt att kombinera dem. Den totala önskade effekten bör vara utgångspunkt när man väljer lämpliga åtgärder och det krävs en noggrann analys av hur de sätts samman. I bästa fall blir den sammanlagda effekten av åtgärdspaket större än summan av de enskilda effekterna. Men i vissa fall kan de enskilda effekterna ta ut varandra och den sammanlagda effekten blir då låg. I denna studie visas exempel på åtgärdspaket utifrån ett Stockholmsperspektiv. Ett urval av olika svenska och internationella åtgärder av typ steg 1–3 och deras effekter beskrivs och ingår i paketen. Dessa har satts samman för att uppnå ökad tillförlitlighet, ökad framkomlighet, minskade koldioxidutsläpp och

bättre resmöjligheter; med kollektivtrafiken.; Åtgärderna som ingår i paketen har kategoriseras utifrån följande grupper:; -Ekonomiska styrmedel, t.ex. förändrad trängselskatt och parkeringsavgifter.; - ITS, t.ex. omställningsbara vägmärken och signalsystem.; - Mobility management, t.ex. information och stöd för samåkning.; - Förbättrad kollektivtrafik, t.ex. ökad framkomlighet och förbättringar inomdrift och underhåll.; Effekterna av de studerade åtgärdspaketen har endast kunnat redovisas som rimliga bedömningar. Inventeringen av svenska och internationella erfarenheter visar att det ännu råder en stor brist på kunskap om såväl effekterna av enskilda åtgärder som av åtgärdspaket. Endast i några enstaka fall finns en väldokumenterad effektsammanställning, exempelvis när det gäller införandet av trängselskatt i; Stockholm.

Europeiska unionen. Europeiska regionala utvecklingsfonden

Stockholm, 102 s, 1,82 MB, 2011

Projektnamn: SATSA- Samverkan för effektivt transportsystem i

Stockholmsregionen

Index terms: Mobility management, Traffic restraint, Congestion charging, Carbon dioxide, Level of service, Delay, Public transport, Priority (traffic), Bus, Impact study, Impact study (environment), Regional planning
Ämnesord: Mobility management, Trafikbegränsning, Trängselavgifter, Koldioxid, Framkomlighet, Förseningar, Kollektivtrafik, Företräde (trafik), Bussar, Effektstudier, Miljöpåverkan, Regional planering
Extra ämnesord: Trafiksignalstyrning

SATSA 1.1 Samverkansprogram effektiv trafik: Gemensamma utmaningar fram till 2020

http://www.tmr.sll.se/Global/SATSA-projektet/Dokument/1_1/SATSA1.1_Gemensamma_utmaningar_20110902.pdf

Denna PM är ett första steg i arbetet med att skapa gemensamma strategier och ett fördjupat gemensamt åtgärdsarbete mellan trafikaktörerna inom Stockholms län. Arbetet sker inom processen att ta fram det samverkansprogram som aktörerna tillsammans genomför under 2011. Syftet är att få en gemensam syn och ökad förståelse för de komplicerade samband som råder inom trafikområdet. Utgångsläget är att såväl väg- som spårsystemets centrala delar, infarterna och inte minst Saltsjö-Mälarsnittet är ansträngda, särskilt under högtrafik. Trafikens miljöpåverkan; genom utsläpp av koldioxid är hög, särskilt från den tunga trafiken, och minskar inte i tillräcklig takt för att nå klimat- och miljömålen. Fram till 2020 genomförs stora utbyggnader av vägar och spår liksom reinvesteringar, underhåll och reparation av befintlig infrastruktur. Samtidigt sker en stor befolkningsökning och exploatering av nya stora bostads- och verksamhetsområden. Efterfrågan på transporter ökar därmed, liksom trycket på trafiksystemet och trängseln under högtrafik. Detta innebär en risk för att regionens arbetsmarknad och ekonomi kan påverkas på ett negativt sätt.; En hållbar utveckling av regionen ställer krav på både god tillgänglighet och minskad miljöpåverkan. Huvudfrågorna fram till 2020 handlar om att:; - förbättra driftsäkerheten, framför allt i spårtrafiken; - öka kapaciteten i infrastrukturen och förbättra kapacitetsutnyttjandet; - påverka efterfrågan på resande och transporter; - minska utsläppen av koldioxid.

Europeiska unionen. Europeiska regionala utvecklingsfonden

Stockholm, 43 s, 1,15 MB, 2011

Projektnamn: SATSA- Samverkan för effektivt transportsystem i

Stockholmsregionen

Index terms: Traffic, Traffic control, Traffic restraint, Sustainability, Regional planning
Ämnesord: Trafik, Trafikstyrning, Trafikbegränsning, Hållbar utveckling, Regional planering

Slutrapport SATSA 2:1 Del B: ”Näringslivets behov av transporter i Arlandaregionen”

http://www.tmr.sll.se/PageFiles/3543/SATSA_Naringslivets_behov_av_transporter_i_Arlandaregionen.pdf

Arbetet med ”Näringslivets behov av transporter i Arlandaregionen” ingår i delprojekt 2:1 i projekt SATSA – Samverkan för effektivt transportsystem; i Stockholmsregionen som stödsav Europeiska regionala utvecklingsfonden (ERUF), mål 2. Delprojekt 2:1 handlar om ”Stärkt kollektivtrafik i korridoren Stockholm–Arlanda–Uppsala” och syftar till att med kollektivtrafik:; • förbättra förutsättningarna för pendlingsutbytet i korridoren Stockholm–Uppsala,; • väsentligt förbättra tillgängligheten till Arlanda, och; • tillgodose kravet att utsläppen av koldioxid för trafiken till Arlandaområdet begränsas och samtidigt stödja Arlandas utvecklingsförutsättningar.; SATSA leddes och samordnades av Tillväxt, miljö och regionplanering (TMR) inom Stockholms läns landsting, med stöd av EU:s regionala utvecklingsfond (ERUF). Syftet med projektet var att stärka samverkan i regionen samt effektivisera transportsystemet i Stockholms län inklusive; korridoren Arlanda–Uppsala. Med TMR/Stockholms läns landsting, Trafikverket region Stockholm, Länsstyrelsen i Stockholms län, Stockholms stad och SL som huvudaktörer genomfördes nio delprojekt 2009-2011. Utöver dessa var även Mälardalsrådet, Regionförbundet; Uppsala län, Upplands Lokaltrafik (UL) samt 13 kommuner i Stockholms och Uppsala län medfinansiärer. Styrgrupp för projektet var Trafikberedningen – Trafikverket (tidigare Vägverket och Banverket), Länsstyrelsen, SL, Stockholms stad och TMR (tidigare Regionplane- och trafikkontoret). Trafikberedningen tog fram projektansökan om EU-finansiering som resulterade i SATSA.

Europeiska Unionen. Europeiska regionala utvecklingsfonden

Stockholm, 34 s, 2,17 MB, 2011

Projektnamn: SATSA- Samverkan för effektivt transportsystem i

Stockholmsregionen

Index terms: Public transport, Improvement, Increase, Journey to work, Regional planning, Airport
Ämnesord: Kollektivtrafik, Förbättring, Ökning, Arbetsresor, Regional planering, Flygplatser

SATSA 2.1 Slutrapport 2011-12-13: SATSA – Förbättrad kollektivtrafik i korridoren Stockholm-Arlanda-Uppsala

http://www.tmr.sll.se/PageFiles/3543/satsa21_slutrapport_2011-12-13_3.pdf

Detta är slutrapporten för delprojektet ”Stärkt kollektivtrafik i korridoren Stockholm–Arlanda–Uppsala” inom SATSA-projektet. Syftet har varit att; finna lösningar som bidrar till förbättrad kollektivtrafik i Arlandakorridoren, ökar tillgängligheten till Arlanda samt bidrar till att begränsa koldioxidutsläppen för att klara Arlandas utsläppstak. Trafikberedningen har varit styrgrupp och AB Storstockholms Lokaltrafik samordnare. Övriga medverkande aktörer har varit Trafikverket,

Upplands Lokaltrafik, Tillväxt, miljö och regionplanering inom Stockholms läns landsting, Swedavia, SJ AB, Mälab, Regionförbundet Uppsala län, Handelskammaren Arlandaregionen, företagarorganisationer i Vallentuna, Sigtuna, Upplands Väsby och Knivsta, Länsstyrelsen i Uppsala län samt kommunerna Sigtuna, Upplands Väsby, Knivsta och Vallentuna. Stockholm–Arlanda–Uppsala är en av landets mest expansiva och intressanta utvecklingskorridorer med växande pendlingsutbyte och efterfrågan på mark för nya verksamheter. Arlanda är en internationell knutpunkt och mycket viktig för landets, Stockholmsregionens och Mälardalens näringsliv och välstånd. Kollektivtrafiken i Arlandakorridoren har samtidigt komplexa och svårplanerade förutsättningar. Arbetet inom delprojektet har omfattat följande delar, projektledare anges inom parentes:; A. Uppföljning av Letter of Intent (TMR); B. Kartläggning av näringslivets behov av transporter i Arlandaregionen (Sigtuna kommun); C. Aktiv marknadskommunikation och produktutveckling för kollektivtrafiken (SL); D. Trafikeringsstrategi på spåren (Trafikverket); E. Ny pendeltågstrafik Stockholm–Arlanda–Uppsala med start december 2012 (SL och UL); F. Utredningar inför ny spårinfrastruktur (Trafikverket); SATSA-projektet avslutas i och med utgången av 2011. Ett stort antal projekt som initierats genom SATSA kommer dock att genomföras i samverkan mellan många engagerade aktörer under flera år framåt.

Europeiska unionen. Europeiska regionala utvecklingsfonden

Stockholm, 25 s, 2,88 MB, 2011

Projektnamn: SATSA- Samverkan för effektivt transportsystem i

stockholmsregionen

Index terms: Regional planning, Public transport, Rail bound transport, Airport
Ämnesord: Regional planering, Kollektivtrafik, Järnvägstransporter, Flygplatser

Slutrapport av delprojekt Steg 1-åtgärder för effektivare resor (3:1) inom SATSA

Palmlund, Charlotta

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001601_001700/Publikation_001699/Slutrapport%20Satsa%203_1.pdf

Stockholmsregionen innebär kapacitetsbrist i trafiksystemet i kombination med krav på minskade utsläpp att alla aktörer behöver arbeta gemensamt med att finna smarta lösningar som kan öka effektiviteten i transportsystemet, minska trängseln, öka tillgängligheten och minska miljöpåverkan.; Syftet med ”Steg 1-åtgärder för effektivare resor” var att tydliggöra effekter och möjligheter att påverka resandet med hjälp av mobility management-åtgärder samt utveckla och testa metoder anpassade för Stockholmsregionen.; Mobility management (MM) är ett arbetssätt som syftar till att minska behovet av resor totalt sett samt ensamåkande i bil specifikt, med hjälp av beteendepåverkande åtgärder. Åtgärderna påverkar transportbehovet, val av transportsätt samt effektiviserar utnyttjandet av befintlig infrastruktur och av fordon.; Det finns en rad tillämpningsområden för MM. Inom ramen för delprojektet bedömdes följande områden som mest angelägna att vidareutveckla i Stockholmsregionen:; • Påverka tjänste- och arbetsresor i företagsområden; • Förbättra kopplingen cykel - kollektivtrafik (vid/till bytespunkter); • MM i samhällsplaneringen och i nya exploateringsområden; • MM vid tillfälliga trafikstörningar/byggprojekt; För att prioritera projektets insatser ytterligare och möjliggöra regionala effekter av de kommande åtgärderna valde projektet att fokusera arbetet geografiskt till

tre stråk:; 1. Nordsektorn (E4, E18, Kista); 2. Ostsektorn (Nacka, Värmdö); 3. Centrala Stockholm (Norra Djurgårdsstaden); Projektet har bl a resulterat i följande:; • Förstudier med kvantifierade effekter som utgör en god grund för framtida samarbete i Kista, Nacka strand och Sickla arbetsplatsområde; • Förstudie om affärsmodeller för MM med tillämpning i Norra Djurgårdsstaden; • Bilpoolsupphandling pågår i flera kommuner i de aktuella stråken; • MM-åtgärder genomförs i byggskedet av E18; • En modell för geografiskt tillämpat MM-arbete; • MM-samarbete och åtgärder på företag pågår i Kista

Trafikverket. Region Stockholm

Stockholm, 7 s, 318,50 kB, 2013

Index terms: Mobility management, Journey to work
Ämnesord: Mobility management, Arbetsresor

Ökad cykling: professionella utmaningar och hinder i den lokala transportplaneringen

Aretun, Åsa; Robertson, Kerstin

http://www.vti.se/sv/publikationer/pdf/okad-cykling-professionella-utmaningar-och-hinder-i-den-lokala-transportplaneringen.pdf

Syftet med rapporten är att belysa orsaker till varför inte policymål om en ökad andel cykling uppnås i den praktiska planeringen på kommunal nivå, samt bidra med kunskap om hur detta implementeringsunderskott kan minskas. Rapporten baseras på forskningsresultat kring implementering av policymål för ökad cykling i fyra större kommuner. Resultaten visar att implementeringsunderskott delvis är en konsekvens av så kallat stigberoende. Mål om ökad cykling hanterats inom ramen för en implementeringsstruktur, organisering – kunskap – åtgärder, där professionella grupper präglas av kunskaper och färdigheter som konventionellt varit inriktade mot att optimera framkomlighet för biltrafik. Denna inriktning tjänar som modell för operativa problembilder och lösningar i planeringen för ökad cykling. Fokus har legat på funktionell uppbyggnad av cykelnät, förbättrad vägutformning och andra cykelinfrastrukturåtgärder. Framkomlighet för cykel har ökat över åren, men effekter i form av ökad andel cykling har uteblivit. Brist på måluppfyllelse har inte lett till någon omprövning av exiterande angreppssätt och metoder. Tjänstemännen är istället orienterade mot att upprätthålla professionella gränser avseende kompetenser och val av åtgärder. Konkret betyder det att tillgänglighetsvillkor för cykel inte säkerställs, vilket vidare medför risker för att effekter av framkomlighetsåtgärder, och andra åtgärder av kompletterande karaktär, blir små eller uteblir. För att förändra denna situation krävs att trafikprofessionerna utvecklas. I rapporten skisseras tre möjliga angreppssätt kring hur det kan ske: utveckling av planeringsstöd kring tillgänglighetsvillkor för cykel av nationella myndigheter som ska stödja kommunerna i sin planering; större fokus och systematik kring att utreda lokala problembilder för ökad cykling, vilket blir styrande för valet av åtgärder; en starkare styrning av tvärsektoriellt arbete i den praktiska planeringen.

rapport 781 0347-6030

Linköping, 42 s + bil, 1,56 MB, 2013

Index terms: Cycling, Increase, Planning, Policy, Local authority, Mobility management
Ämnesord: Cykling, Ökning, Planering, Policy, Kommunalförvaltning, Mobility management

Energieffektivitet och miljökriterier vid upphandling av fordon och trafiktjänster inom regional persontågtrafik: riktlinjer för trafikhuvudmän i Europa

Pippert, Matthias; Elmquist, Anna-Lena

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001401_001500/Publikation_001450/ECORailS_Riktlinjer_Svenska.pdf

Trafikhuvudmän spelar idag en nyckelroll för att förbättra kvaliteten och miljön för passagerartåg. Syftet med dessa riktlinjer är att stötta beslutsfattare i processen att inkludera energieffektivitet och miljökriterier i trafikhuvudmannens upphandlingsprocess och trafikavtal.; Detta dokument vänder sig till personer med ansvar för att organisera kollektivtrafik, inklusive managementenheter, myndighetspersoner och politiker liksom anställda hos trafikhuvudmän som förbereder, sammanställer och utvärderar anbudsdokument och avtal.; Projektkonsortiet med 15 partners från sex europeiska länder tog fram riktlinjerna för att hjälpa beslutsfattare att vidta miljöförbättrande åtgärder, buller och minskning av växthusgaser vid upphandling av regional passagerartrafik på järnväg och fordon.; Större delen av riktlinjerna har utvärderats i fyra europeiska testregioner (Lombardy, Berlin-Brandenburg, Öresund, Timisoara), som representerar olika europeiska typer av passagerartrafik på järnväg. Tillsammans har mer än 50 aktörer från projektet, inklusive trafikhuvudmän, tågoperatörer, infrastrukturhållare och leverantörer, identifierat olika krav, behov och förväntningar på miljörelaterad upphandling.

Allianz pro Schiene e.V.

Berlin, 8,05 MB, 60 s, 2011

Projektnamn: ECORailS

Övrig info: supported by Intelligent Energy Europe

Index terms: Train, Passenger train, Rolling stock, Energy consumption, Emission, Noise, Specifications
Ämnesord: Tåg, Passagerartåg, Rullande materiel, Energiförbrukning, Emissioner, Buller, Riktlinjer
Extra ämnesord: Upphandling

Slutrapport: Integrerad åtgärdsplanering i Storbritannien och Sverige: analys och slutsatser om styrningsstrategier

Hiselius, Lena; Envall, Pelle; Wendle, Björn; Nordlund, Jesper

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001301_001400/Publikation_001378/Integrerad%c3%85tg%c3%a4rdspl2011-11-14%20-%20I%c3%85%20-%20Slutrapport_slutlig.pdf

Slutredovisningen av projektet. Projektet har tagit del av brittiska erfarenheter av integrerade åtgärdsplaner för infrastrukturförbättringar och mobility management. Detta som grund för att analysera i vilken mån dessa erfarenheter kan vara relevanta att överföra till svenska förhållanden för att effektivisera användningen av offentliga medel i Sverige

Lunds universitet. Tekniska högskolan. Inst. för Teknik och samhälle. Trafik och väg

Lund, 260 kB, 39 s, 2011

Index terms: Town planning, Public transport, Traffic restraint, Mobility management, Sustainability, Regional planning, Policy, Local authority, United Kingdom, Sweden
Ämnesord: Stadsplanering, Kollektivtrafik, Trafikbegränsning, Mobility management, Hållbar utveckling, Regional planering, Policy, Kommunalförvaltning, Storbritannien, Sverige

Delrapport 1: Integrerade åtgärdsplaner i Storbritannien och Sverige: pågående och tidigare svenska studier inom området

Envall, Pelle

http://fudinfo.trafikverket.se/fudinfoexternwebb/pages/PublikationVisa.aspx?PublikationId=1379

Delredovisning av projektet. Projektet har tagit del av brittiska erfarenheter av integrerade åtgärdsplaner för infrastrukturförbättringar och mobility management. Detta som grund för att analysera i vilken mån dessa erfarenheter kan vara relevanta att överföra till svenska förhållanden för att effektivisera användningen av offentliga medel i Sverige

WSP Sverige AB

Stockholm, 650 kB, 18 s, 2011

Index terms: Town planning, Sustainability, Environment protection, Traffic restraint, Bibliography
Ämnesord: Stadsplanering, Hållbar utveckling, Miljöskydd, Trafikbegränsning, Bibliografier

Delrapport 2: Integrerade åtgärdsplaner i Storbritannien och Sverige: kort beskrivning av tre planeringssituationer

Nordlund, Jesper

http://fudinfo.trafikverket.se/fudinfoexternwebb/pages/PublikationVisa.aspx?PublikationId=1380

En underlagsrapport med en jämförelse för tre planeringssituationer.

Trivector Traffic AB Rapport 2010:23

Lund, 574 kB, 23 s, 2011

Index terms: Town planning, Residential area, Land use, Traffic, Sustainability, Mobility management, Planning, Policy, Local authority, United Kingdom, Sweden
Ämnesord: Stadsplanering, Bostadsområden, Markanvändning, Trafik, Hållbar utveckling, Mobility management, Planering, Policy, Kommunalförvaltning, Storbritannien, Sverige

Delrapport 3: Integrerade åtgärdsplaner i Storbritannien och Sverige: Jämförelse av de båda ländernas planeringsprocesser för transportinfrastruktur

Envall, Pelle; Nordlund, Jesper; Wendle, Björn

http://fudinfo.trafikverket.se/fudinfoexternwebb/pages/PublikationVisa.aspx?PublikationId=1381

Denna delrapport jämför det brittiska planeringssystemet för trafikplanering och investeringar i det vägbaserade transportsystemets infrastruktur och dithörande mobility managementåtgärder. Rapporten visar att det finns signifikanta skillnader i de riktlinjer som styr plane-ringen liksom på vilken nivå planeringen genomförs i de båda länderna. Men det finns också likheter, t.ex. vad gäller de nationella mål som ska vara styrande för (åtminstone) statliga investeringar i transportrelaterade förbättringsåtgärder.

WSP Sverige AB

Stockholm, 826 kB, 45 s, 2011

Index terms: Town planning, Traffic, Sustainability, Mobility management, Sweden, United Kingdom
Ämnesord: Stadsplanering, Trafik, Hållbar utveckling, Mobility management, Sverige, Storbritannien

Smart infartsparkering: underlag för införande

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001301_001400/Publikation_001400/3684_Smart%20infartsparkering_infstrategi_final.pdf

Under våren 2011 lät Trafikverket genomföra en studie där förutsättningarna för att införa Smart infartsparkering i Stockholms län studerades. Olika aktörer intervjuades, tillgänglighetsanalyser genomfördes och olika lagstiftningar gicks igenom. Målsättningen var att belysa möjligheterna och identifiera eventuella hinder för etablering.; Studien visade att Smart infartsparkering kan vara ett sätt att effektivisera infartsparkeringar och även minska söktrafiken, d.v.s. den del av trafiken som söker efter p-platser under framför allt rusningstrafik. Sju rekommendationer för införande formulerades: - 1. Länsövergripande riktlinjer för infartsparkeringar bör utformas. - 2. SL föreslås vara huvudman. - 3. Trafikverket föreslås stödja med samverkande aktiviteter. - 4. Kommunerna föreslås ansvara för drift och underhåll (alternativt servicepartners eller köpcentra). - 5. Ett införande bör ske stegvist, med bom och koppling till kollektivtrafiken i citynära områden, och bokningsbara p-platser och P+tjänster i områden där man önskar få fler att infartsparkera. - 6. Lagstiftning bör ses över och göras mer ändamålsenlig. - 7. På kort sikt föreslås att Smart infartsparkering utformas som ett styrmedel och subventioneras med offentliga medel. På längre sikt bör en affärsmodell utvecklas, där erbjudandet innebär att ett tydligt värde genereras för användarna.; Politiskt stöd, samverkan/organisatoriskt ramverk, tekniskt ramverk, lokala behovsanalyser, förankring och tydlig och målgruppsanpassad kommunikation är viktiga förutsättningar som stödjer en införandeprocess.; Studien visar att det finns flera hinder för att införa Smart infartsparkering på gatumark.; Det är i dagsläget avsevärt enklare att etablera Smart infartsparkering på tomtmark än på gatumark. Förutsättningarna för infartsparkering kan skilja sig åt relativt mycket mellan kommuner. Lokala utredningar bör därför göras före införande.

Trafikverket

AB Storstockholms Lokaltrafik

uo, 2,48 MB, 59 s, 2011

Index terms: Park and ride, Planning
Ämnesord: Infartsparkering, Planering

Långsiktigt hållbara transportlösningar för dagligvarusektorn

Bark, Peter; Troeng, Ulf; Storhagen, Nils G

Projektets syfte var att kartlägga dagligvaruföretagens transporter avseende varukategorier, varumängder och flödesvägar. Ett mål var att tillsammans med problemägare inom dagligvaru- och transportbranscherna utveckla konkurrensneutrala transportlösningar vilka avsåg minska resursförbrukningen och miljöpåverkan vid dagligvarutransporter. Detta avsåg innefatta ett förslag till lastbärarkoncept för effektiva intermodala transporter och en rationell distribution.

TFK - TransportForsK TFK rapport 2011:7 0347-0970

Stockholm, 102 s, 2011

ISBN: 978-91-85665-48-8

Index terms: Delivery, Shop, Sustainability, Efficiency, Logistics, Intermodal transport (freight), Trailer, Semi trailer, Lorry, Container (freight), Corridor (transp), Fuel consumption, Emission
Ämnesord: Leverans, Butiker, Hållbar utveckling, Effektivitet, Logistik, Intermodala transporter, Släpvagnar, Påhängsvagnar, Lastbilar, Containrar, Transportkorridorer, Bränsleförbrukning, Emissioner

EcoGrad: a concept for ecological city planning for St Petersburg, Russia

Nystedt, Åsa; Sepponen, Mari; Teerimo, Seppo; Nummelin, Johanna; Virtanen, Mikko; Lahti, Pekka

http://www.vtt.fi/inf/pdf/tiedotteet/2010/T2566.pdf

The objective of the EcoGrad project was to develop an ecological city planning concept suitable for St. Petersburg. One important principle in the development process was the GOLD principle (Globally Optimised, Locally Designed). Local conditions were taken into account while implementing globally optimised solutions. A dense city structure, minimisation of transport need and buildings energy consumption, maximisation of public transportation and bicycle routs, maximisation of renewable energy systems, sustainable waste and water management systems and taking social and cultural aspects into account, are parts of an ecological concept. In Russia, energy efficient building technologies are still much undeveloped. Also renewable energy systems are quite unknown. On the other hand the Russian norms require very short distances to daily services as day-care, schools, health care stations, and shops. This is an aspect that supports ecological city planning very well. A questionnaire among inhabitants was done within the project. It revealed among other things that it is not a value for inhabitants (92%) that their houses are heated with renewable energy. Mechanical ventilation is unknown for most of the respondents (80%), fresh air was anyhow considered important (80%), but less than half of the respondents (40%) were willing to pay for it. Taking the inhabitants into the development process, in other words Living Lab activities, are an important part of ecological planning and should be implemented into the planning process. Plans for three pilots were developed within the project. The areas energy consumption was assessed and emissions were calculated for different types of renewable energy systems. In one of the pilots an ecological plan was made with the boundary that no extra investment costs were allowed. In the ppp-pilot focus was put on different business models based on public-private partnership models. During the project seven meetings were held with representatives for St. Petersburg. Elements of the concept were presented, and feedback was received about how the concept would be suitable in local conditions. Based on this feedback the concept was revised and a criteria list was developed. The criteria list helps the local city planning with requiring the right things in order to develop an ecological housing area.

VTT Technical Research Centre of Finland.

VTT tiedotteita - research notes 2566

Esbo, 2011

ISBN: 9789513877019

Index terms: Town planning, Residential area, Ecological engineering, Sustainability, Alternative energy, Energy conservation, Public transport, Cycle track, Public private partnership, Russia
Ämnesord: Stadsplanering, Bostadsområden, Hållbar utveckling, Förnybara energikällor, Energihushållning, Kollektivtrafik, Cykelbanor, Offentlig-privat samverkan, Ryssland

Förstudie: samlastningsterminalen: en nyckelfunktion för ökad integration i sammodala transportkedjor för dagligvaror och styckegods

Bärthel, Fredrik

Intermodala transporter har av transportköpare, transportörer och myndigheter lyfts fram som ett prioriterat område, men det krävs konsolidering av volymer motsvarande ett heltåg för att kostnads-kvalitets-kvoten skall bli bättre än för lastbilstransporter. Konsolidering i intermodala transportsystem sker i fyra nivåer. I den första nivån sker plock och samlastning av gods som lastas på en och samma lastpall eller rullbur. I nivå två samlastas lastpallar/rullburar i samma lastbärare. På den tredje nivån sker samordning av lastbärare i samma tågsätt eller vagngrupp. På den fjärde nivån sker samordning av vagnar/vagngrupper från olika destinationer genom växling, rangering eller bundling för att erbjuda oförändrad frekvens med bibehållen skalekonomi i olika transportrelationer. Syftet med projektet har varit att genomföra en kartläggning av nuvarande kunskap och användning av samlastningsfunktioner i intermodala transportsystem med betoning på funktionen samlastningsterminal. Ansatsen har varit att utvärdera huruvida en samlokalisering av samlastningsterminaler på de intermodala terminalerna kan påverka potentialen för intermodala transporter.; I rapporten diskuterar vi effekterna av ökad samordning och samlastning i det intermodala transportsystemet.

TFK - TransportForsK.

TFK rapport 2011:4

Stockholm, 48 s, 2011

ISBN: 9789185665464, 9185665460

Index terms: Freight terminal, Location, Intermodal transport (freight), Transport network, Cost benefit analysis
Ämnesord: Godsterminaler, Läge, Intermodala transporter, Transportnätverk, Nyttokostnadsanalys

Integrating C2E and C2C traffic into city logistics planning

Crainic, Teodor Gabriel; Errico, Fausto; Rei, Walter; Ricciardi, Nicoletta

http://www.cirrelt.ca/DocumentsTravail/CIRRELT-2011-08.pdf

Interuniversity Research Centre on Enterprise Networks, Logistics and Transportation, CIRRELT.

CIRRELT-2011-08

Montreal, 16 s, 332 kB, 2011

Index terms: Logistics, Freight transport, Delivery, Urban area, Model (not math), Inter urban
Ämnesord: Logistik, Godstransporter, Leverans, Tätorter, Modeller, Interurban

This is how we get The Livable City: final report

Engström, Carl-Johan; Ingelström, Anki

https://online4.ineko.se/trafikverket

The final report for ”The Livable City”, a joint project between Swedish national agencies and three medium-sized municipalities. The aim of the project has been to develop processes focusing on the interplay between the planning of urban transport systems and built up environment.

Trafikverket. Publikation 2011:006

Borlänge, 3,19 MB, 56 s, 2011

ISBN: 9789174671032

Index terms: Town planning, Town centre, Sustainability, Accessibility, Traffic restraint, Attractiveness (transp), Public transport
Ämnesord: Stadsplanering, Stadskärnor, Hållbar utveckling, Tillgänglighet, Trafikbegränsning, Attraktivitet (transporter), Kollektivtrafik

Framtid med växtvärk: kan hållbara städer möta klimatutmaningarna?

http://www.vinnova.se/upload/EPiStorePDF/va-11-02.pdf

Vinnova. Analys. VA 2011:02

Stockholm, 84 s, 771 Kb, 2011

ISBN: 9789186517304

Index terms: Urban area, Urban development, Sustainability, Transport, Greenhouse gas
Ämnesord: Tätorter, Stadsutveckling, Hållbar utveckling, Transporter, Växthusgaser

CyCitys fältstudier av cykelstaden

Nordström, Tobias; Envall, Pelle

http://www.cycity.se/docs/2012-01-19%20CyCity_Faltstudier_slutversion.pdf

Detta dokument utgör slutredovisning av en delstudie inom CyCity kallad fältstudier av cykelstaden. Effektivare markanvändning för transporter är en utmaning för nästan alla stora och växande städer i världen. Bebyggelse och befolkningsförtätning är också en viktig strategi för attraktiva och hållbara städer i många delar av världen. Att cykeln tar relativt liten plats jämfört med andra och kompletterande transportmedel är en av dess fördelar. Transportsystemets yteffektivitet är enligt flera forskare och institutioner en av de viktigaste aspekterna i diskussioner om hur städer bör planeras och utvecklas. Trots det så redovisas knappast alls denna aspekt i många relevanta beslutsunderlag. En anledning till detta är att det idag finns få goda visuella och kommunikativa illustrationer av cykelns positiva markanvändningsaspekter. Syftet med fältstudierna har varit att fördjupa vår förståelse för olika cyklisters beteende, preferenser och cykeltrafikens kapacitet och hur man kan kommunicera sådan kunskap genom visualisering. Fältstudierna har också gett underlag för CyCitys arbete med ett datorstöd för cykelplanering.

Spacescape AB

WSP

Stockholm, 15 s, 1,49 MB, 2012

Projektnamn: CyCity

Enabling sustainable development of urban freight from a local authority perspective

Lindholm, Maria E

http://publications.lib.chalmers.se/publication/167582-enabling-sustainable-development-of-urban-freight-from-a-local-authority-perspective

On the path towards sustainability for the urban area, local authorities make decisions that affect freight transport. However, local authorities might not always be aware of the effect their decisions and policy making have on freight transport and its stakeholders. The purpose of this thesis is to contribute to the enabling for local authorities to include freight in urban transport planning for sustainable development. In order to get urban freight on the overall transport planning agenda for the local authorities, there is a need to understand urban freight transport of today and what sustainable urban freight transport is. The complexity could be illustrated through a description of the stakeholders, the key mechanisms as the outcomes of their interaction as well as the drivers and barriers to sustainable urban freight transport. In this thesis seven qualitative studies have been performed, based on case studies of cities in northern Europe, in order to get a comprehensive picture of the situation as well as how to handle it. The conclusion of this thesis is that in order for local authorities to include freight transport in the overall transport planning, there is a need for resources and information. There are several possibilities, where freight partnerships, information exchange and increased capacity in personnel at local authorities are some, but it is necessary to include relevant stakeholders in the process. To work with freight transport, a thorough transport planning process is essential, whereby urban prerequisites and stakeholder requirements are taken into consideration. Contributions from this thesis consist of four main areas: the development of a framework identifying and separating actors and stakeholders; the enhancement of mechanisms that influence the urban freight transport situation; the development of an assessment framework for the involvement of stakeholders through urban freight partnerships as a step towards the inclusion of freight transport in the overall transport planning; and, finally, the development of a transport planning process model in order to help local authorities to work with freight transport, highlighting the importance of defining the problem and taking into consideration the urban context and stakeholder requirements, evaluation and good dissemination.

Chalmers University of Technology Doktorsavhandlingar vid Chalmers tekniska högskola. Ny serie 3470 0346-718X

Göteborg, 144 s, 3,31 MB, 2012

ISBN: 978-91-7385-789-5

Övrig info: Endast kappan. Saknar de 6 uppsatserna.

Index terms: Delivery, Freight transport, Urban area, Sustainable transport, Local authority, Planning, Thesis
Ämnesord: Leverans, Godstransporter, Tätorter, Hållbara transporter, Kommunalförvaltning, Planering, Doktorsavhandling

Effektivare urbana transportsystem: om förutsättningarna för etablering av samlastningscentraler i Göteborgsregionen

Olsson, Jerry

http://www.hur.nu/wp-content/uploads/2014/07/2012-3-Effektivare-urbana-transportsystem.pdf

I den här studien har förutsättningarna att etablera samlastningscentraler avsedda för små lastbilsåkerier och bud-/kurirfirmor i Göteborgs Stad och Mölndals kommun som transporterar gods till detaljhandeln i Göteborgsregionen undersökts. Studien har genomförts genom en kartläggning och en enkätundersökning. Studien tog sin utgångspunkt i att det svenska transportsystemet under lång tid utsatts för ökad belastning då allt mindre gods transporteras allt längre avstånd i allt fler (lätta) lastbilar vars fyllnadsgrad minskat över tid. Denna utveckling påverkar inte bara individer, transportköpare och transportörer, utan även samhället i stort, då kapacitet och resurser som kunde användas mer effektivt går förlorade. Förutsättningarna i Göteborgsregionen En samlastningscentral är en anläggning där mindre godsenheter konsolideras och förs över till lastbilar med hög fyllnads-grad före transport till slutdestinationen. Syftet med en samlastningscentral är att transportera lika mycket gods med färre utförda fordonskilometer, vilket skulle effektivisera godstransporterna. Kartläggningen visade att samlastningscentraler teoretiskt skulle kunna etableras så att en stor majoritet av transportörerna skulle nå dem inom en relativt kort transporttid, vilket skulle kunna ge effektivare transporteffektivare urbana transportsystem. Om förutsättningarna för etablering av samlastningscentraler i Göteborgsregionen. Samlastningscentraler kan effektivisera transporterna av gods till detaljhandeln. Men när det finns några få stora transportörer och ett flertal små samt att butikerna är utspridda är det svårt att hitta rätt läge. I Göteborgstrakten finns det flera faktorer som gör etableringen av samlastningscentraler. Vidare skulle samlastning kunna minska den påverkan trafikträngseln idag har på leveranstider. Detaljhandelns ökade krav på snabba och frekventa leveranser skulle kunna underlättas av effektiva och väl fungerande samlastningscentraler.; Executive summary: http://www.hur.nu/wp-content/uploads/2014/07/2012-3-Effektivare-urbana-transportsystem-Exsum.pdf

Handelns Utvecklingsråd Forskningsrapport 2012:3

Stockholm, 88 s, 902 kB, 2012

ISBN: 978-91-86508-16-6

Index terms: Freight terminal, Delivery, Logistics, Urban area
Ämnesord: Godsterminaler, Leverans, Logistik, Tätorter

Handlingsplan för Mobility Management i Stockholms län

Palmlund, Charlotta

https://online4.ineko.se/trafikverket

Rapporten är en regional handlingsplan som har tagits fram inom ramen för projektet PIMMS CAPITAL – ett FoI-projekt som även finansierats av medel från INTERREG IVC och Länsstyrelsen i Stockholms län. Syftet är att öka effektiviteten i transportsystemet och minska negativ miljöpåverkan, genom att förändra färdmedelsfördelning och resmönster. Handlingsplanen beskriver hur ett gott exempel från Birmingham, ”The Corridor Approach”, kan implementeras i Stockholmsregionen. Detta innebär en aktörsgemensam koordinering av åtgärder utmed tolv stråk, för att gemensamt få ut mer effekt av satsade medel. I stråkpaketen ingår bl a åtgärder som förbättrar kvalitet och utbud av hållbara resalternativ (t ex Steg 2- och 3-åtgärder för kollektivtrafik), styrmedel och målgruppsinriktade informationsinsatser.

Trafikverket Publikation 2012:173

Borlänge, 49 s + bil, 4,55 MB, 2012

ISBN: 978-91-7467-375-3

Index terms: Mobility management, Regional planning, Public transport, Cycling, Level of service, Journey to work, Journey to school, Modal split, Interchange (public transport)
Ämnesord: Mobility management, Regional planering, Kollektivtrafik, Cykling, Framkomlighet, Arbetsresor, Skolresor, Färdmedelsfördelning, Bytespunkter

Kunskapsläge och kunskapsbrister när det gäller samspelet mellan byggnad, fysisk planering, transporter och trafik och de sociala och ekonomiska verkningarna på individ och hushållsnivå

Hagson, Anders

http://www.bisek.se/data/research/d_kunskapsoversikter/2c.pdf

Bilen som dominerande färdmedel är ifrågasatt på såväl statlig som lokal politisk nivå i Norden, liksom i EU. Policyformuleringar med mål att gå från att möjliggöra hög rörlighet till att planera för tillgänglighet och minskad bilanvändning genom samordnad stads- och trafikplanering inriktad på förtätning, funktionsblandning och trafiknät som prioriterar gång, cykel och kollektivtrafik har funnits under lång tid, men gång på gång konstaterar utvärderingar att den fysiska samhällsplaneringen inte klarar att nå fastställda mål. Fokus i uppdraget ligger därför på beslutsrelevant kunskap m a p dels behovet att effektivisera det fysiska samhällsbyggandet dels att möjliggöra att beslutsunderlagen redovisar socioekonomiska konsekvenser av alternativa handlingsvägar. I steg 1 genomförde Negin Shabi en traditionell litteraturgenomgång av böcker, kunskaps-sammanställningar, vetenskapligt granskade artiklar och rapporter. Drygt 300 abstracts kontrollerades och 150 befanns vara relevanta för uppdraget. Kunskapsgenomgången visade att majoriteten av studierna var begränsade geografiskt och empiriskt samt att krävdes ett stort antal kombinationer av sökord för att finna dem. I steg 2 skrev Anders Hagson föreliggande slutrapport. Den bygger dels på valda delar av ovan beskrivna litteraturgenomgång (150 referenser) dels på kännedom om annan relevant litteratur.

Chalmers

Göteborg, 2,60 MB, 44 s, 2012

Projektnamn: BISEK

Index terms: Journey, Behaviour, Town planning, Land use, Density, Urban area, Car, Vehicle ownership
Ämnesord: Resor, Beteende, Stadsplanering, Markanvändning, Täthet, Tätorter, Bilar, Fordonsinnehav

Utveckling av långsiktigt hållbara system för fjärrtransport och citydistribution av detaljhandelns varor

Ölund, Anna; Bark, Peter; Troeng, Ulf

Distribution av varor sker idag över allt längre avstånd. Detta beror främst på att antalet distributionspunkter hos grossister för detaljhandeln, och då framförallt dagligvaruhandeln, minskar. Utvecklingen mot alltmer koncentrerade lager- och terminalverksamheter har inneburit att distributionsavstånden har ökat. Som en följd av detta har transporterna från distributionsanläggningar och annan terminalverksamhet övergått från att tidigare vara kortväga distribution, vanligen på avstånd mindre än 100 km, till att ha karaktären av fjärrtransporter över betydligt längre avstånd. Trots ökade avstånd har en minskning av andelen transporter som sker på järnväg noterats. Detta fastän ökade avstånd och större volymer i varje sändning borde gynna transport-system med skalfördelar, vilket inkluderar järnvägstransporter. Idag sker detaljhandelns distributionstransporter nästan uteslutande på väg och med större lastbilar än tidigare. Detta har medfört att detaljhandelns transportarbete på väg har ökat, samtidigt som transportarbetet på järnväg har minskat, vilket utgör ett problem ur miljösynpunkt. För att öka andelen gods som transporteras på järnväg har förslag framlagts i tidigare studier om att skapa branschgemensamma transport- och systemupplägg. Genom att olika aktörer, i vissa fall konkurrenter, samutnyttjar terminalanläggningar och transportsystem kan miljö- och kostnadsmässigt hållbara transport- och logistiklösningar skapas. För att möjliggöra denna typ av branschgemensamma upplägg är det viktigt att kartlägga hur detaljhandelns varuflöden ser ut i Sverige samt vilka tunga stråk som finns. Som en följd av övergången från kortväga distribution till distribution över längre avstånd har storleken på distributionsfordonen ökat. De flesta långväga distributionstransporter på väg sker med fullstora lastbilar, med en längd på upp till 24 respektive 25,25 m och en bruttovikt på 60 ton. Storleken på dessa fordon kan skapa problem vid distribution, främst i stadskärnor där mindre fordon ofta är en förutsättning för att kunna ta sig fram. Omlastning till mindre distributionsfordon i anslutning till tätortscentran bidrar till ökade kostnader och riskerar att försämra transportkedjans kvalitet. Tidigare lösningar har funnits med distributionssystem baserade på mindre lastbärare, som transporterats på järnväg på längre avstånd och på lastbil vid distribution. Ett exempel på detta är Csam-systemet som byggdes upp under 1980-talet. Syftet med studien har varit att kartlägga detaljhandelns varuflöden samt att definiera de största stråken och sammanställa underlag för branschgemensamma transport- och logistikupplägg. Vidare har syftet varit att kartlägga innovativ teknik för intermodal hantering samt möjligheter att etablera ett distributionssystem för tätortsmiljö där gränssnittet mot järnvägstransporter kan läggas närmare godsmottagaren än idag. Studien har innefattat litteraturstudier, kartläggning av varuflöden, analys och identifiering av flöden samt idéutveckling kring intermodala transport-lösningar. Primärdata har främst inhämtats genom intervjuer samt i vissa fall från olika slags företagsintern information. Sekundärdata har inhämtats via litteraturstudier samt vid genomgång av underlag från tidigare forskningsprojekt.

TFK – TransportForsK TFK rapport 2012:3 0347-0970

Stockholm, 55 s, 2012

ISBN: 978-91-85665-34-1, 91-85665-34-7

Index terms: Delivery, Shop, Town centre, Urban area, Container (freight), Semi trailer, Intermodal transport (freight)
Ämnesord: Leverans, Butiker, Stadskärnor, Tätorter, Containrar, Påhängsvagnar, Intermodala transporter
Extra ämnesord: Lastbärare, Samdistribution

Spelplats Haga: överlämningsdokument: “UrbaniaBeta”: dialogverktyg för hållbar stadsutveckling (prototyp)

Myrén, Per

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001501_001600/Publikation_001575/Spelplats%20Haga%20-%20o%c2%a6%c3%aaverla%c2%a6%c3%aamningsdokument_UrbaniaBeta_20120410.pdf

Urbania är ett digitalt workshopverktyg för insamling, dialog och ideutveckling inom hållbar stadsutveckling. Urbania vänder sig till tjänstemän som arbetar med strategisk planering, insamling av synpunkter och analys och som behöver ett lättanvänt verktyg som ger ett snabbt resultat. Urbania är lättanvänt och har kort startsträcka och kräver inte speciella licenser eller högpresterande hårdvara för användning.UrbaniaBeta är idag (2012-04-10) en prototyp som utvecklats på uppdrag av Trafikverket och Göteborgs Stad av Mistra Urban Futures under 2011-2012. UrbaniaBeta har testats i samrådsmöten anordnade av SDN Centrum och SDN Majorna-Linné i Göteborg. UrbaniaBeta använder sig av GoogleMaps som grund.

Mistra Urban Futures

Göteborg, 14,71 MB, 16 s, 2012

Index terms: Urban development, Planning, Public participation, Map, Interactive model, Prototype
Ämnesord: Stadsutveckling, Planering, Samråd, Kartor, Interaktiva modeller, Prototyper

Stadsstruktur och transportrelaterad klimatpåverkan: en kunskapsöversikt

Tornberg, Patrik; Eriksson, Inga-Maj

http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-93493

Rapporten belyser vad aktuell kunskap säger om hur man kan förstå betydelsen av städers täthet och funktionsblandning samt den regionala strukturen och transportstrukturens omfattning och utformning för samhällets transportmönster, med särskilt fokus på persontransporter.; Avgörande för att minska behoven av motoriserade transporter (biltresor) inom städer är att tillgängligheten till stadens olika funktioner (målpunkter) är bättre med gång- och cykel- och kollektivtrafik än med bil.; För att bedöma lämpliga förändringar i en viss stad behövs både ett lokalt och ett regionalt perspektiv. Det behövs en förståelse för hur transportsystemet fungerar och dess sårbarhet, kapacitetsproblem, etc. liksom hur befintliga och nya bebyggelsemiljöer kan bidra till förutsättningarna för gång-, cykel-, och kollektivtrafik.

Kungliga Tekniska högskolan. Institutionen för samhällsplanering och miljö TRITA-SoM 2012-08 1653-6126

Stockholm, 52 s, 890 kB, 2012

ISBN: 978-91-7501-312-1

Index terms: Town planning, Impact study (environment), Traffic, Emission, Air pollution, Urban area, Density
Ämnesord: Stadsplanering, Miljöpåverkan, Trafik, Emissioner, Luftföroreningar, Tätorter, Täthet

Underlag för regionalt cykelvägnät i Stockholms län: pendlingsrelationer mellan bostäder och arbetsplatser

Spolander, Krister

http://www.tmr.sll.se/Global/SATSA-projektet/Dokument/Regional_cykelstrategi/SATSA_II_Regional_cykelstrategi_Pendlingsanalyser_mars2012.pdf

Denna rapport har tagits fram inom projektet SATSA II Regional cykelstrategi som finansieras med tid och kontanta medel av Trafikverket, Stockholms läns landsting, Storstockholms lokal-trafik, 14 kommuner, Länsstyrelsen samt EU:s strukturfonder. SATSA står för Samverkan för ett effektivt tranportsystem i Stockholmsregionen. Rapportens syfte har varit att ge ett geografiskt underlag för lokaliseringen av regionala cykelstråk.; Resultaten har vid ett par tillfällen diskuterats i en grupp bestående av Ebba Larsson Trafikverket, Maria Johansson Sweco, Louise Gustafsson Sweco, Krister Isaksson Sweco och Isabelle Petersson Sweco. Tack för synpunkter och inspirerande diskussioner. För analyser och slutsatser i denna rapport ansvarar undertecknad.

Europeiska unionen. Europeiska regionala utvecklingsfonden

Stockholm, 57 s, 7,37 MB, 2012

Projektnamn: SATSA- Samverkan för effektivt transportsystem i

Stockholmsregionen

Index terms: Journey to work, Residential area, Workplace, Itinerary, Cycle track, Regional planning
Ämnesord: Arbetsresor, Bostadsområden, Arbetsplatser, Resväg, Cykelbanor, Regional planering

Satsa Samverkan för effektivt transportsystem i Stockholmsregionen: Följeforskning – Slutrapport

Gustavsson, Magnus; Rydberg Åkesson, Christian; Tunström, Moa

http://www.tmr.sll.se/Global/SATSA-projektet/Dokument/F%C3%B6ljeforskning/SLUTRAPPORT%20-%20F%C3%96LJEFORSKNING%20SATSA%20120123.pdf

SATSA-projektet har löpande följts och värderats av en forskargrupp från institutionen för Samhällsplanering och miljö på KTH. Under projektets gång har ambitionen med följeforskningen varit att studera de olika delprojekten och deras framåtskridande, dvs. hur delprojekten lyckas uppnå uppställda mål och vilka konkreta resultat som de resulterat i. Vi har inte ägnat oss åt en traditionell utvärdering innebärande att vi avvaktat ett slutresultat som sedan bedömts i förhållande till mål, effekter och effektivitet. Istället har vårt fokus varit riktat mot att löpande återföra synpunkter och förslag i syfte att bidra till att uppställda mål ska kunna nås och att praktiskt användbar kunskap ska komma ut ur de olika delprojekten och SATSA-projektet som helhet.

Kungliga Tekniska högskolan, KTH. Samhällsplanering och miljö

Stockholm, 14 s, 474,87 kB, 2012

Projektnamn: Satsa- Samverkan för effektivt transportsystem i

Stockholmsregionen

Index terms: Transport infrastructure, Transport, Urban area, Investment, Regional planning, Management
Ämnesord: Transportinfrastruktur, Transporter, Tätorter, Investeringar, Regional planering, Ledning och organisation

SATSA 1.1 Handlingsprogram effektiv trafik: förstudie om hantering av trängsel, sårbarhet och trafikens klimatpåverkan i tidsperspektivet 2012 - 2020

http://www.tmr.sll.se/Global/SATSA-projektet/Dokument/1_1/SATSA_1_1_Forstudie_HP_Effektiv_Trafik_Slutrapport_100416.pdf

Banverket, Länsstyrelsen i Stockholms län, Regionplanekontoret Storstockholms Lokaltrafik, Stockholms stad och Vägverket samarbetar i EU strukturfondsprojektet projektet ”SATSA – samverkan för effektivt transportsystem i Stockholmsregionen”. Projektets övergripande syfte är att det ska samordna och effektivisera genomförandet av åtgärder för en effektiv trafik, enligt RUFS 2010, Stockholmsöverenskommelsen och Systemanalysen för Stockholm-Mälarregionen m.fl. strategiska dokument.; Denna rapport är en förstudie i SATSA 1.1 som studerat möjligheterna för aktörerna att gemensamt skapa ett handlingsprogram på temat effektiv trafik i perioden 2012-2020. Förstudien ska ligga till grund för ställningstaganden för det fortsatta arbetet och redovisar hur en kommande huvudstudie kan bedrivas i samverkan mellan aktörerna.

Europeiska unionen. Europeiska regionala utvecklingsfonden

Stockholm, 36 s, 545,76 KB, 2012

Projektnamn: SATSA- Samverkan för effektivt transportsystem i

Stockholmsregionen

Index terms: Transport, Transport infrastructure, Regional planning, Capacity (traffic network), Accessibility, Sustainability, Energy consumption, Policy
Ämnesord: Transporter, Transportinfrastruktur, Regional planering, Kapacitet (trafiknät), Tillgänglighet, Hållbar utveckling, Energiförbrukning, Policy

Parkering som styrmedel för att minska arbetspendling med bil: en undersökning av arbetet i tio svenska kommuner

Koucky, Mihcael; Renhammar, Torunn

https://online4.ineko.se/trafikverket

Synen på parkering i svenska städer håller på att förändras. I takt med ökad trängsel och miljöpåverkan har bilen och därmed även parkering, börjat ifrågasättas som självklara element i stadskärnorna. Med hållbar stadsplanering som utgångspunkt har många kommuner som mål att öka andelen gång- cykel- och kollektivresenärer, samtidigt som andelen bilresenärer ska minska. I det arbetet kan parkering vara ett effektivt styrmedel, under förutsättning att rätt åtgärder införs vid rätt tidpunkt och på rätt plats. Sambanden mellan olika parkeringsåtgärder och dess effekter kan vara komplexa och svåra att förutse, vilket gör att behovet av kunskap inom området är stort. Denna rapport är författad av Koucky & Partners AB på uppdrag av Trafikverket. Bakgrunden är en önskan från Trafikverket om att kunna stödja svenska kommuners arbete genom att utveckla effektsamband, alternativt bedömning av potentialer, när styrningsåtgärder för parkering genomförs. Undersökningen som presenteras i denna rapport har syftat till att ta reda på mer om tio svenska kommuners arbete med parkering som styrmedel för att minska bilanvändning vid arbetspendling. Målet har varit att öka kunskapen om parkering som styrmedel och vilka åtgärder som har visats ge god effekt i form av minskad andel bilresor och lägre klimatpåverkan. Studien har avgränsats till att fokusera på arbetspendling och arbetsplatsparkering, eftersom bilpendling vanligen är den största orsaken till trängsel och de problem som följer av den. De konkreta frågorna som undersökningen har syftat till att besvara: Vilka parkeringsåtgärder har genomförts i kommunerna i syfte att minska arbetspendling med bil? Finns det tillräckligt med dokumenterade effekter för att kunna styrka sambanden mellan olika åtgärder och dess effekter på bilanvändning, kollektivtrafikutnyttjande och påverkan på miljön i form av koldioxidutsläpp? Vilka parkeringsåtgärder i syfte att minska arbetspendling med bil planerar kommunerna att arbeta med i en nära framtid? Vilket stöd önskar sig kommunerna i arbetet med parkering som styrmedel? För att kunna sätta in kommunernas arbete i en kontext har undersökningen även inkluderat en mindre litteraturstudie.

Trafikverket Publikation 2012:127

Borlänge, 35 s, 465,39 kB, 2012

ISBN: 978-91-7467-326-5

Index terms: Parking, Attractiveness (transp), Journey to work, Tariff, Journey time, Comfort, Interview, Local authority
Ämnesord: Parkering, Attraktivitet (transporter), Arbetsresor, Taxa, Restid, Komfort, Intervjuer, Kommunalförvaltning

Ekonomiska styrmedel för en hållbar personbilstrafik: konsekvenser för tillgänglighet: en kunskapsöversikt

Aretun, Åsa; Hansson, Lisa

http://www.vti.se/sv/publikationer/pdf/ekonomiska-styrmedel-for-en-hallbar-personbilstrafik---konsekvenser-for-tillganglighet.pdf

Syftet med denna rapport är att presentera en översikt av befintliga styrmedel i Norge och Sverige som avser att ge ekonomiska incitament för individer att förändra sin bilanvändning i hållbar riktning. Syftet är vidare att ge en kunskapsöversikt kring hur dessa styrmedel har behandlats i internationell tillgänglighetsforskning där frågor kring jämlikhet och fördelning av tillgänglighet mellan individer och grupper i samhället fokuseras. Rapporten inleds med en översikt av befintliga styrmedel som syftar till hållbar personbilstrafik i Norge och Sverige. Rapporten fortsätter med en introduktion av internationell tillgänglighetsforskning; hur tillgänglighet, jämlikhet och fördelning konceptualiseras och utforskas inom denna forskning och forskningens centrala resultat. Därefter redogörs för hur ekonomiska styrmedel som syftar till hållbar personbilstrafik behandlas i tillgänglighetslitteraturen samt vilka behov av vidare forskning som identifieras i denna litteratur. Rapporten avslutas med att presentera ett antal områden av relevans för fortsatt forskning i Sverige och Norge. I rapporten visas att ekonomiska styrmedel riktade mot personbilstrafik för att åstadkomma hållbara transporter har uppmärksammats alltmer i internationell tillgänglighetsforskning under senare år. I tillgänglighetslitteraturen behandlas och diskuteras dessa ekonomiska styrmedel utifrån forskningsresultat inom fältet kring ojämlika strukturella förhållanden när det gäller medborgares tillgång till transporter och dess sociala konsekvenser. Genomgående bedöms de ekonomiska styrmedlen leda till att transportrelaterad social ojämlikhet och utsatthet ökar. Styrmedlen förväntas försämra tillgängligheten för de medborgare som har svårt att bära ökade transportkostnader, men som samtidigt måste använda bil för att få tillgång till nödvändiga samhällsfunktioner såsom exempelvis arbete, baskonsumtion, utbildning, hälso- och sjukvård. I grunden hänger denna problematik samman med en bilanpassad samhällsbyggnad avseende lokaliseringsmönster och transportinfrastruktur som försvårar för människor att skapa tillgänglighet med andra transportmedel: gång-, cykel- och kollektivtrafik. De ekonomiska styrmedlen avvisas inte som sådana i litteraturen. Däremot riktas kritik mot att införandet av dessa inte åtföljs av förändrade lokaliseringsmönster samt satsningar på alternativ transportinfrastruktur som minskar medborgares bilberoende och som därmed skulle mildra negativa jämlikhets- och fördelningseffekter. I tillgänglighetslitteraturen poängteras att kunskapen generellt är bristfällig kring bilberoende respektive hur tillgängligheten med alternativa transportslag ser ut i samhället; hur tillgänglighet fördelar sig mellan individer och grupper med olika transportförutsättningar och transportbehov i samspel med lokaliseringsmönster och transportinfrastruktur. Bristen på kunskap förklaras med att tillgänglighet kräver analys av empiriska faktorer som traditionellt har ansetts ligga utanför transportområdet. I mycket transportforskning fokuseras resande och rörlighet som sådant. Denna fokusering präglar även 6 VTI notat 33-2012 FoU om ekonomiska styrmedel, vilket således medför att jämlikhets- och fördelningseffekter avseende rörlighet utreds. Tillgänglighet kräver studium av hur människors transportbehov och transportvillkor är sammanlänkade med hur samhällslivet är organiserat i tid och rum. För att utreda jämlikhets- och fördelningseffekter av ekonomiska styrmedel avseende tillgänglighet måste modeller och metoder som kan hantera sociospatiala förhållanden appliceras, där hänvisning görs till utvecklingsarbetet inom tillgänglighetsforskningen kring Social Impact Assessments och Accessibility Planning. Det är angeläget att i kommande FoU testa och utveckla den här typen av modeller, anpassade till geografiska förhållanden i Sverige och Norge. Det är vidare viktigt att studera hur miljömål och tillgänglighetsmål och eventuella

målkonflikter hanteras i den politiskt-administrativa processen som föranleder ekonomiska styrmedel riktade mot personbilstrafiken. Det är också angeläget att studera hur en bättre samverkan kan ske mellan olika transportpolitiska verktyg för att uppnå mål om hållbara transporter såsom styrmedel, regleringar, transportplanering och fysisk planering. För denna FoU kan ett komparativt perspektiv mellan Norge och Sverige vara värdefullt.

VTI notat 33-2012

Linköping, 32 s, 336,80 kB, 2012

Projektnamn: BISEK

Index terms: Car, Private transport, Policy, Tax, Legislation, Impact study, Journey, Behaviour, Sustainability, Congestion charging
Ämnesord: Bilar, Privata transporter, Policy, Skatter, Lagstiftning, Effektstudier, Resor, Beteende, Hållbar utveckling, Trängselavgifter

Miljövänligare transporter?: mål- och intressekonflikter i kommunala och regionala besluts- och planeringsprocesser

Hrelja, Robert

http://www.vti.se/sv/publikationer/pdf/miljovanligare-transporter-mal--och-intressekonflikter-i-kommunala-och-regionala-besluts--och-planeringsprocesser.pdf

Syftet med denna rapport är att analysera hur mål- och intressekonflikter påverkar möjligheterna att skapa miljövänligare transportsystem på kommunal och regional nivå. Det undersöks genom fallstudier i två kommuner och en region. Fallen handlar om utbyggnad av två handelsområden i Örebro och Borlänge som riskerar att öka bilresandet, samt utvecklingen av väl fungerande kollektivtrafiksystem i Skåne. De tre fallen visar sammantaget hur kommuners ekonomiska drivkrafter måste hanteras och styras för att det ska vara möjligt att skapa miljövänligare transportsystem. Det finns åtminstone två sätt att angripa problemet med den långsamma omställningstakten av transportsystemet. Det första sättet är att förändra lagstiftning och regelverk för beslutsfattande och planering. Man kan till exempel reglera detaljhandelns utveckling genom ny lagstiftning. Det skulle förutom att tvinga fram kommunal samordning påverka maktrelationerna mellan företag och kommuner som företag kan använda för att spela ut kommuner mot varandra. Inskränkningar av det kommunala planmonopolet är emellertid en mycket kontroversiell fråga som det finns litet politiskt stöd för. Det andra sättet att angripa problemet är att inom ramen för rådande lagstiftning utnyttja kommunernas ekonomiska drivkrafter för att få till stånd en mer miljövänlig samhällsplanering. Exemplet med kollektivtrafikens styrning och regional samhällsplanering i Skåne visar att det kan vara en framkomlig väg för att få till stånd miljömässigt ”bättre” beslut och planering.

VTI rapport 754 0347-6030

Linköping, 40 s, 1,32 MB, 2012

Index terms: Town planning, Shopping centre, Public transport, Decision process, Local authority, Regional planning, Sustainability
Ämnesord: Stadsplanering, Köpcentrum, Kollektivtrafik, Beslutsfattande, Kommunalförvaltning, Regional planering, Hållbar utveckling

Bebyggelsestruktur, resande och energi för persontransporter

Holmberg, Bengt; Brundell-Freij, Karin

http://lup.lub.lu.se/luur/download?func=downloadFile&recordOId=3053736&fileOId=3053745

Det finns en ganska stor samstämmighet bland forskare och också bland många planerare att en rad åtgärder behövs för att transportsystemet skall kunna anpassas till miljömålen. I den här studien har vi undersökt hur olika bebyggelseparametrar påverkar resandet och energianvändningen. Flertalet studier inom området har fokuserat på stora städer. I vår studie har vi analyserat orter i Skåne. Syftet har varit att öka kunskaperna om hur olika bebyggelseparametrar och bebyggelsens lokalisering påverkar resandet och energianvändningen. Två separata modeller har tagits fram, en för alla orter/städer i Skåne exklusive Malmö samt en specifik för Malmö. Som beroende parametrar har vi använt total reslängd, reslängd med bil respektive kollektivtrafik samt energianvändning för personresor. De bebyggelseparametrar som kommit med i modellerna är: Bebyggelse-täthet, självförsörjningsgrad med arbetsplatser, serviceutbud, kollektivt utbud och avstånd till regioncentrum. Eftersom socio-ekonomiska variabler starkt påverkar resandet har ett antal sådana också inkluderats i modellen. Det gäller: Kön, ålder, barn i hushållet, tillgång till bil samt inkomst. Den totala reslängden påverkas mest av ortens täthet samt självförsörjningsgraden men även serviceutbud och avstånd till regioncentrum påverkar. För energi-användningen tillkommer tillgång till tåg. I modellen för Malmö blir endast avstånd till centrum och kollektivt turutbud signifikanta.

Lunds Universitet, Tekniska högskolan i Lund. Teknik och samhälle. Trafik och väg Bulletin 275 1653-1930

Lund, 39 s, 3,56 MB, 2012

Index terms: Regional planning, Residential area, Car, Public transport, Journey, Length, Energy consumption, Urban area, Rural area
Ämnesord: Regional planering, Bostadsområden, Bilar, Kollektivtrafik, Resor, Längd, Energiförbrukning, Tätorter, Landsbygd

Low carbon smart mobility & green logistics

Kostiainen, Juho

http://www.vtt.fi/inf/pdf/technology/2012/T39.pdf

This review is intended as an overview of European and Finnish targets for greenhouse gas emissions from transport and logistics, and of performed and proposed measures for achieving these targets through intelligent transport systems (ITS). It was found that the impacts of different solutions are evaluated by expert estimates or models but seldom measured directly. The reason for the use of estimates is mainly the difficulty of differentiating one source from an overall change in emissions. The impact of ITS usually arises from increased usage of public transportation (decreased use of private vehicles), reduced congestion (improved traffic flow and alternative routing), and improved eco-driving (automatic solutions or information based on analysis, such as speed suggestions). The influence of ITS is, typically, realized more from being an enhancing tool rather than a complete solution. The use of ITS does help in reducing emissions. However, other measures such as technological advances in fuel efficiency, alternative energy, regulatory and financial guidance and more well-planned land use may be more direct and powerful. Combining ITS and ICT with the abovementioned alternatives is recommended.

VTT Technical Research Centre of Finland VTT Technology 39 2242-122X

Esbo, 34 s, 1,19 MB, 2012

ISBN: 978-951-38-7855-9

Index terms: Greenhouse gas, Emission control, Intelligent transport system, Traffic control
Ämnesord: Växthusgaser, Emissionskontroll, Intelligenta transportsystem, Trafikstyrning

14 tips till dig som vill skapa en grönare kommun: Version 2 - med läs-mer-tips och länkar: här ger vi tips om trafik- och transportåtgärder samt mål, strategi och planering för klimatsmarta kommuner

http://www.trivector.se/fileadmin/uploads/Traffic/Produktblad/14_tips_130304_webb.pdf

Här ger vi tips och länkar om trafik- och transportåtgärder samt mål, strategi och planering för klimatsmarta kommuner

Trivector Traffic

Lund, 4 s, 704 kB, 2013

Övrig info: Även med titeln: Fjorton tips för klimatsmarta kommuner

Index terms: Sustainable transport, Policy, Town planning, Specifications, Local authority
Ämnesord: Hållbara transporter, Policy, Stadsplanering, Riktlinjer, Kommunalförvaltning

Planering och utformning för ett ökat gående: litteraturstudie, expertseminarium och trafik- och stadsplanerares syn på utemiljöns förutsättningar för gångtrafik

Johansson, Charlotta; Berglund, Ulla; Nilsson, Annika; Wennberg, Hanna; Larsson, Hanna

http://pure.ltu.se/portal/files/36015392/Etapp_1_G_ENDE.pdf

I denna rapport som utgör den första i projektet ingår en litteraturstudie, intervjuer med trafik- och samhällsplanerare i kommuner, och ett expertseminarium. Resultatet från de tre studierna utgör sedan underlag för det fortsatta arbetet inom projektet avseende inriktning på studerade frågeställningar.; Resultatet från studien är att begreppen färdmedelsval – vägval – byggd miljö (för fotgängare) har visat sig vara centrala inom ämnesområdet planering för gåendetrafikanter och gående som transportsätt. Det är svårt att hitta handfasta råd som går att omsätta i planeringen direkt i dag. Även främja gåendet som transportsätt är centralt där de positiva hälsoeffekterna av gåendet är viktiga.; Samhället behöver ge gåendefrågorna mer utrymme och skapa bilden av att gångtrafiken är en norm och därigenom ges högre status. I det arbetet ingår även att definiera de aktörer som är relevanta när det gäller gåendefrågor. Det är även intressant att bedöma vilka grupper det går att vinna flest gående inom, och att undersöka och beskriva skillnaden mellan nyttoresor, till arbete och skola, samt gåendet för rekreation och motion för att bättre kunna förbättra planeringen för gående som tranportsätt.; Det saknas data som beskriver och kvantifierar gåendet, och till det hör bristen på metoder för att mäta gåendet. Även den fortfarande övergripande kunskapen av stadsplaneringens och därmed finmaskigheten och tätheten i gåendenätet lyfts fram.; Den samlade slutsatsen är att det är viktigt att visa på gåendets betydelse, och att gåendet som transportsätt borde vara ett normativt inslag i planeringen.; Alternativ URL: http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001401_001500/Publikation_001486/Etapp%201%20G%c3%85ENDE.pdf

Luleå tekniska universitet Forskningsrapport 1402-1528

Luleå, 770 kB, 87 s, 2012

ISBN: 978-91-7439-397-2

Index terms: Walking, Footway, Accessibility, Urban area, Town planning
Ämnesord: Gång, Gångvägar, Tillgänglighet, Tätorter, Stadsplanering

Samordning av trafik- och bebyggelseplanering: förutsättningar för hållbar mobilitet

Hrelja, Robert; Nyberg, Jonna

http://www.vti.se/sv/publikationer/pdf/samordning-av-trafik--och-bebyggelseplanering-for-hallbar-mobilitet.pdf

Bebyggelsens lokalisering i förhållande till trafiksystemens utformning påverkar människors resmönster och val av färdmedel. Det är därför viktigt att bebyggelse- och trafikfrågor samordnas i beslut och planering för att skapa så kallad hållbar mobilitet. Studiens syfte är att belysa kommunala förutsättningar för samordning av bebyggelse- och trafikfrågor i förhållande till hållbar mobilitet. Studien bygger på två fallstudier där två nya bostadsområden i Trelleborg respektive Lund har studerats. När samordningen har fungerat har tre faktorer understött varandra och skapat vad man kan benämna för en strategisk besluts- och planeringsprocess. Dessa tre faktorer kan utvecklas för att stärka samordningen även i andra svenska kommuner; 1) långsiktiga visioner för stadsutveckling, 2) lång- och kortsiktiga handlingar, 3) medborgarnas stöd för den långsiktiga visionen. Det är viktigt att samordningen blir till ett verktyg för genomförandet av stadsbyggnadsvisionen som bör bygga på principerna för hållbar mobilitet. För att omsätta visionen i långsiktiga och kortsiktiga handlingar måste den påverka konkreta besluts- och planeringsprocesser. Därför bör man i svenska kommuner utveckla mekanismer för samförstånd mellan politiker och tjänstemän. Medborgarnas stöd för de långsiktiga visionerna är också viktig. Utan medborgarnas stöd blir det svårt att fatta ibland obekväma politiska beslut som påverkar medborgarnas resebeteenden.

VTI rapport 742 0347-6030

Linköping, 46 s, 875 kB, 2012

Index terms: Town planning, Traffic, Residential area, Public transport, Sustainability, Decision process, Policy, Local authority
Ämnesord: Stadsplanering, Trafik, Bostadsområden, Kollektivtrafik, Hållbar utveckling, Beslutsfattande, Policy, Kommunalförvaltning

Rethinking transport in the Öresund region: policies, strategies and behaviours

Carlsson, Carl-Magnus (ed.); Emtairah, Tareq (ed.); Gammelgaard, Britta (ed.); Vestergaard Jensen, Anders (ed.); Thidell, Åke (ed.)

http://lup.lub.lu.se/luur/download?func=downloadFile&recordOId=2429902&fileOId=2429926

Øresund EcoMobility contributes to knowledge creation for sustainable transport and; green logistics, city transport, and energy systems with a specific focus on the conditions; and needs of the Øresund region. In this book, long distance goods transport and; strategies for green corridors through the Øresund and Europe are studied, multi-criteria; models for analysis in transport and infrastructural planning are tested, City Logistics and; the challenges within urban areas are scrutinised, challenges for fossil free transport; systems are analysed, and mobility management in municipalities and use patterns in; leisure travel are considered. In addition, the role of knowledge transfer between; companies is examined. New energy systems are fundamental in creating a sustainable; future, but are not enough – new forms of governance, planning, and stakeholder; involvement to create sustainable supply chains are also needed. In the Øresund Region,; the largest hub in Scandinavia for transport of goods and people, efficient and at the same; time environmentally safe transport is a key factor for sustainable regional development.; The Øresund Region is comparable to many other growth regions in the world, although,; it has been fortunate enough not to suffer from the worst drawbacks of recent increases in; transport development. However, this does not mean that we can become complacent.; Increased congestion, noise, and emissions that largely can be attributed to transport of; goods and people, have become evident. Today, with climate change at the forefront of; the agenda for policy makers and public authorities, companies, organisation, and citizens; it is important for all stakeholders, present and future, to become engaged in the; discussion surrounding the implications of growth in the transportation network of the; Øresund Region. Rethinking Transport in the Øresund Region: Policies, Strategies and; Behaviours, is an important contribution in such a process of knowledge sharing and; capacity building for the region.; Øresund EcoMobility aims at innovating for economic, social, and environmental; sustainability by addressing issues of green logistics, city transport, travel behaviour, and; renewable energy systems. Through using new approaches to transport policies and; legislation, by exploring new strategies in decision making and demand management, and; by allowing for new forms of association to induce better allocation and use of resources; and infrastructure, this book provides some of the answers and paths forward to help; achieve a more sustainable future.

Lund University

Lund, 4,15 MB, 266 s, 2012

ISBN: 978-91-88902-86-3

Övrig info: Øresund EcoMobility, Interreg IVa

Index terms: Transport, Freight transport, Passenger transport, Mobility (pers), Sustainability, Mobility management
Ämnesord: Transporter, Godstransporter, Persontransporter, Mobilitet, Hållbar utveckling, Mobility management

Flexibla arbetsplatsers betydelse för hållbar utveckling i storstadsregioner

Kramers, Anna; Söderholm, Malin

http://kth.diva-portal.org/smash/get/diva2:704969/FULLTEXT01.pdf

Denna rapport presenterar en intervjuundersökning som genomförts under våren 2013. Syftet med studien var att undersöka drivkrafter och barriärer för att etablera flexibla arbetsplatser i förorter. Genom flexibla arbetsplatser går det att uppnå miljövinster i form av minskat energiutnyttjande genom minskat resande och bättre utnyttjande av uppvärmda ytor. Studien undersöker också möjligheten att presentera flexibla arbetsplatser i en reseplanerare som ett alternativ till att pendla till arbetet.

Kungliga tekniska högskolan. Centre for Sustainable Communications Report from the KTH Centre for Sustainable Communications 2013:1 1654-479X

TRITA-SUS

Stockholm, 50 s, 1,11 MB, 2013

Index terms: Place of work, Journey to work, Sustainable transport
Ämnesord: Arbetplatser, Arbetsresor, Hållbara transporter

Transportsnålt samhälle - för att nå klimatmålen 2030: delprojekt III: klimatmålens krav på tätortsåtgärder kontra kommunernas planer

Ericsson, Eva; Marntell, Malin; Brundell-Freij, Karin

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_002401_002500/Publikation_002445/RapportTSS_III_leverans131105_reviderad140102.pdf

Transportsnålt samhälle III är det senaste av en sekvens av projekt som startades 2010. Projekten i kedjan har genomförts av, för och tillsammans med Trafikverket. De har kretsat kring ett antal frågeställningar som rör transportsystemets utveckling och möjligheten att nå klimatmålen såsom: Vad behövs för att nå klimatmålen? Vad betyder det? Hur omfattande och kraftiga behöver åtgärderna i så fall vara? Händer det med dagens planer? Hur kan det ske? Vad behövs då?

WSP Analys & Strategi

Stockholm, 138 s, 5,29 MB, 2013

Index terms: Town planning, Regional planning, Local authority, Sustainability, Walking, Cycling, Public transport, Traffic restraint, Shopping centre, Greenhouse gas, Emission control
Ämnesord: Stadsplanering, Regional planering, Kommunalförvaltning, Hållbar utveckling, Gång, Cykling, Kollektivtrafik, Trafikbegränsning, Köpcentrum, Växthusgaser, Emissionskontroll

EcoMobility assessment and audit scheme: a step-by-step guide for advisors / auditors

http://fudinfo.trafikverket.se/fudinfoexternwebb/Pages/PublikationVisa.aspx?PublikationId=1955

The guide concerns the different steps in the EcoMobility SHIFT system. These steps cover e.g. to measures indicators, to assess performance and to review policies of a municipality.

ICLEI - Local Governments for Sustainability, 25 s + bil, 2013

Index terms: Town planning, Mobility management, Sustainability
Ämnesord: Stadsplanering, Mobility management, Hållbar utveckling

EcoMobility SHIFT: indikatorbeskrivningar

http://fudinfo.trafikverket.se/fudinfoexternwebb/Pages/PublikationVisa.aspx?PublikationId=1957

Indikatorbeskrivningarna innehåller information om hur respektive indikator ska mätas på rätt sätt. Den är obligatorisk läsning för alla som är aktivt involverade i EcoMobility SHIFT-utvärderingen.

ICLEI - Local Governments for Sustainability

Bonn, 45 s, 2013

Övrig info: Finns även utgiven på engelska (EcoMobility SHIFT -

assessment and audit scheme: indicator descriptions)

Index terms: Town planning, Mobility management, Sustainability, Carfree, Measurement
Ämnesord: Stadsplanering, Mobility management, Hållbar utveckling, Bilfri, Mätning

EcoMobility SHIFT - assessment and audit scheme: city profile factors

http://fudinfo.trafikverket.se/fudinfoexternwebb/Pages/PublikationVisa.aspx?PublikationId=1956

Within the SHIFT scheme, seven city profile factors have been determined. These seven factors together describe the city's overall background context which might favour or hinder a city in its overall EcoMobility performance.

ICLEI - Local Governments for Sustainability

Bonn, 11 s, 2013

Index terms: Town planning, Mobility management, Sustainability, Town
Ämnesord: Stadsplanering, Mobility management, Hållbar utveckling, Städer

Parkering för hållbar stadsutveckling

Berg, Johannes

http://webbutik.skl.se/bilder/artiklar/pdf/7164-920-1.pdf?issuusl=ignore

Möjligheten att använda parkering som verktyg för att främja resande med kollektivtrafik och cykel är idag en underutnyttjad potential. Strategiska parkeringsåtgärder är ett av de effektivaste styrmedlen för att locka dagens bilister till att välja miljövänligare färdsätt. Denna skrift ska genom goda exempel inspirera kommunerna att använda parkeringspolitiken som ett styrmedel för en hållbar stadsutveckling. Skriften innehåller exempel från såväl Sverige som Europa, där parkering används som styrmedel t ex med flexibla parkeringstal och gröna parkeringsköp. Den vänder sig främst till ansvariga tjänstemän och politiker i kommunerna, men även till konsulter inom området.

Sveriges kommuner och landsting

Stockholm, 58 s, 2013

ISBN: 978-91-7164-920-1

Index terms: Parking, Parking pricing, Town planning, Traffic restraint, Policy, Sustainability
Ämnesord: Parkering, Parkeringsavgifter, Stadsplanering, Trafikbegränsning, Policy, Hållbar utveckling

Stockholmsregionens regionala stadskärnor: en långsiktigt hållbar bebyggelsestruktur

Johnson, Göran; Hede, Hans

http://www.tmr.sll.se/Global/Dokument/Verksamhet/flerkarnig/4_2013_regionala_web.pdf

Den regionala utvecklingsplanen för Stockholmsregionen, RUFS 2010, är inriktad på att regionen ska bli mer flerkärnig. En snabb och hållbar tillväxt förutsätter att bostäder och lokaler kan byggas utanför den centrala regionkärnan utan att bebyggelsen sprids ut. En koncentration av bostäder och verksamheter till de yttre regionala stadskärnorna främjar utvecklingen av en tät och flerkärnig region. Under de senaste åren har kunskapsunderlaget om flerkärnighet fördjupats och breddats i ett stort antal underlagsstudier. Resultatet av studierna sammanfattas och konkretiseras i denna rapport som är en uppdatering av rapporten ”Flera kärnor” från 2003. Syftet är att sprida kunskap om flerkärnigheten och att stimulera till dialog mellan de olika aktörer som behöver samverka för att genomföra en flerkärnig region. Fortlöpande kunskapsutveckling och erfarenhetsåterföring är en nödvändig del av denna process. I rapporten redovisas motiven bakom inriktningen mot en ökad flerkärnighet; i RUFS 2010 men också den teoretiska bakgrunden inom forskningen och internationella erfarenheter på området. Rapporten belyser även hur olika samhällssektorer – näringslivet, detaljhandel, utbildning och forskning samt kulturlivet – på olika sätt kan bidra till och dra nytta av att nya regionala stadskärnor utvecklas i Stockholmsregionen. Avslutningsvis beskrivs hur stadsbyggandet och trafikplaneringen kan stödja en önskad utveckling.

Stockholms läns landsting. Tillväxt, miljö och regionplanering Rapport 4:2013 4:2013 104-6104

Stockholm, 96 s, 2013

Index terms: Suburbs, Development, Town planning, Urban development, Public transport, Transport
Ämnesord: Förorter, Utveckling, Stadsplanering, Stadsutveckling, Kollektivtrafik, Transporter

Parkering i täta attraktiva städer: dags att ändra synsätt

Envall, Pelle

https://online4.ineko.se/trafikverket

Denna rapport av resultatet från forskningsprojektet Parkering i storstad. Projektet har pågått 2010–2013 och finansierats av Trafikverket. Utförare är WSP Sverige AB och KTH. Huvudförfattare till rapporten är Pelle Envall, doktor i trafikplanering. Författaren svarar för innehållet i rapporten. Trafikverket och SKL har inte tagit ställning till slutsatserna. Den enskilt viktigaste rekommendationen från projektet är att arbeta för att skilja marknaden för bostäder och bilparkering åt i växande storstäder. Endast på detta sätt kan ytor i staden på sikt användas på ett effektivt sätt (se WSP 2012 och avsnitt 3.2). Detta innebär att allt fler får köpa eller hyra sin parkering på öppna marknaden. Köper man en parkeringsplats kan priset gå upp eller ner. Ökar efterfrågan går priset upp. Då kanske man väljer att sälja sin bil för att använda pengarna på annat sätt. En hel del arbete återstår för att kalibrera de olika rabatter på parkeringstalet som olika mobilitetstjänster, till exempel bilpooler, ska ge i olika lägen. Återstår gör också att utarbeta balanserade och robusta former för de avtal mellan byggherre och planmyndighet som behövs inom flexibla parkeringstal, för bilfritt byggande och parkeringsreservat. Att hålla fast vid fasta mininivåer för parkeringsnormer är dock inte utan problem. Det är inte en bättre lösning.

Trafikverket

Borlänge, 16 s, 2013

Annan numrering: 100599

Index terms: Parking, Policy, Specifications, Town planning
Ämnesord: Parkering, Policy, Riktlinjer, Stadsplanering

Kommunala erfarenheter av samordnad kollektivtrafik- och bebyggelseplanering

Thoresson, Karin; Isaksson, Karolina

http://webbutik.skl.se/bilder/artiklar/pdf/7585-020-7.pdf?issuusl=ignore

Denna skrift analyserar planeringsprocessen i tre svenska städer med fokus på hur väl kollektivtrafik- och bebyggelseplanering har integrerats. Syftet med skriften är att fördjupa kunskapen om hur kollektivtrafikfrågor och fysisk planering kopplas samman samt att mot denna bakgrund identifiera vilka kriterier som avgör hur pass samordnad och integrerad kollektivtrafikplaneringen och bebyggelseplaneringen blir. Skriften vänder sig till både tjänstemän och politiker som deltar i samhällsbyggnadsprocessen inom kommunerna och i de regionala kollektivtrafikmyndigheterna. De privata byggherrarna är också en viktig målgrupp för skriften.

Sveriges kommuner och landsting

Stockholm, 67 s, 2,39 MB, 2013

ISBN: 978-91-7585-020-7

Index terms: Planning, Public transport, Town planning, Residential area, Local authority, Policy, Decision process, Regional planning
Ämnesord: Planering, Kollektivtrafik, Stadsplanering, Bostadsområden, Kommunalförvaltning, Policy, Beslutsfattande, Regional planering

Vägledning för regionala cykelplaner

Berg, Svante

https://online4.ineko.se/trafikverket

Enligt Trafikverkets strategiska inriktning är en av sex strategiska utmaningar väl fungerande resor och transporter i storstadsregionerna. Ett av målen är att cykel- och gångtrafiken i storstäderna ska öka och vara säkrare. Ett väl fungerande gång- och cykelvägnät är en förutsättning för detta. Trafikverket vill göra det möjligt för allt fler att välja cykeln i stället för bilen vid kortare resor. Framför allt ska fler kunna cykla till och från jobbet eller skolan. Folkhälsan blir bättre, eftersom cyklister får en naturlig vardagsmotion, och både miljön och framkomligheten vinner på att fler väljer cykel i stället för bil för korta resor.

Trafikverket Publikation 2013:137

Borlänge, 20 s, 1,05 MB, 2013

ISBN: 978-91-7467-528-3

Index terms: Cycling, Planning, Investment, Accessibility, Safety, Financing, Cycle track, Regional planning
Ämnesord: Cykling, Planering, Investeringar, Tillgänglighet, Säkerhet, Finansiering, Cykelbanor, Regional planering

Parkering i täta attraktiva städer: dags att förändra synsätt

Envall, Pelle

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001701_001800/Publikation_001730/Parkering_i_t%c3%a4ta_attraktiva_st%c3%a4der_100_599_WEBB.pdf

Ett viktigt budskap i denna rapport är att det finns mycket att vinna på att förändra det sätt som myndigheter och planerare arbetar med parkering. I detta avsnitt försöker vi kort beskriva hur arbetssättet är i dag och vad som behöver göras för att systematisera nya arbetssätt. Det är viktigt att ta till vara det som görs bra i dag och samtidigt våga tänka och göra på ett nytt bättre sätt.

Trafikverket

Borlänge, 15 s, 2,34 MB, 2013

Index terms: Parking, Policy, Planning, Town planning, Urban area
Ämnesord: Parkering, Policy, Planering, Stadsplanering, Tätorter
Extra ämnesord: Parkeringsnormer

Kollektivtrafik för lokal och regional utveckling: förutsättningar för strategiskt kollektivtrafikarbete i Dalarna och Östergötland 2000-2011

Isaksson, Karolina; Heikkinen, Satu

http://www.vti.se/sv/publikationer/pdf/kollektivtrafik-for-lokal-och-regional-utveckling--forutsattningar-for-strategiskt-kollektivtrafikarbete-i-dalarna-och-ostergotland-2000-2011.pdf

I denna rapport redovisas resultaten av en studie av de institutionella förutsättningar som har karakteriserat kollektivtrafikpolitik och -planering på regional och lokal nivå i Sverige under 2000-talets första decennium. Syftet är att få en empiriskt grundad förståelse för vilka förutsättningar som har funnits lokalt och regionalt för att bedriva ett långsiktigt och strategiskt kollektivtrafikarbete, med fokus på både formella och informella faktorer. Studiens empiriska fokus riktas mot två län, Dalarna och Östergötland. I studien identifieras och diskuteras de utmaningar som har kringgärdat ambitionerna att utveckla en mer långsiktig strategisk kollektivtrafikplanering på lokal och regional nivå under den studerade perioden. En av knäckfrågorna har handlat om relationen mellan ägare (kommun och landsting) och trafikbolag. En annan viktig fråga handlar om de kostnadsfördelningsmodeller som har tillämpats i respektive län, och hur dessa har förmått skapa incitament för att bedriva ett långsiktigt strategiskt kollektivtrafikarbete. En tredje fråga som har varit avgörande i de båda länen är vilket intresse och vilken förmåga som har funnits för att etablera och upprätthålla en övergripande strategisk blick och viljeinriktning i det lokala och regionala kollektivtrafikarbetet. Sammanfattningsvis ger studien en rad exempel på både utmaningar och drivkrafter för ett mer långsiktigt och strategiskt kollektivtrafikarbete. De båda exemplen visar att det ofta är en kombination av formella och informella institutionella förutsättningar som avgör hur god förmåga som etableras för att bedriva ett långsiktigt strategiskt kollektivtrafikarbete. 2000-talets första decennium har präglats av ett formellt institutionellt regelverk som inte har varit särskilt gynnsamt i detta avseende. Avslutningsvis förs i rapporten en diskussion om den nya kollektivtrafiklagstiftningen som gällt från den 1 januari 2012, och i vilken mån den kan ses som en lösning på de utmaningar som har identifierats. En fråga som framstår som avgörande för framtiden är kopplingen mellan de regionala kollektivtrafikmyndigheterna och kommunerna, som genom det kommunala planmonopolet styr bebyggelseutvecklingen och den lokala trafikplaneringen och därmed på flera sätt avgör vilka förutsättningar som skapas för kollektivtrafiken. Det återstår att se hur den nya lagstiftningen faller ut i detta och en rad andra avseenden. Det är viktigt att framöver noga följa upp och analysera hur det går med det strategiska kollektivtrafikarbetet lokalt och regionalt, med fokus på såväl formella som informella institutionella förutsättningar.

VTI rapport 792 0347-6030

Linköping, 63 s + bil, 2013

Index terms: Public transport, Planning, Regional planning, Administration, Policy, Decision process, Local authority, Transport authority
Ämnesord: Kollektivtrafik, Planering, Regional planering, Administration, Policy, Beslutsfattande, Kommunalförvaltning, Trafikhuvudman

Vägen framåt för svenska bilpooler

Backelin, David; Renhammar, Torunn

https://online4.ineko.se/online/download.aspx?id=43324

Slutsatserna i denna rapport är att bilpooler är en viktig pusselbit i ett energieffektivt transportsystem och ett av flera verktyg för att uppnå de transportpolitiska målen. Branschen är dock fortfarande relativt ny och består till stor del av många små kooperativa aktörer, vilket gör den sårbar. För branschens fortsatta tillväxt och utveckling är det viktigt att offentliga aktörer underlättar och utifrån sina olika roller stödjer arbetet med bilpooler. Branschen skulle också gynnas av en större samordning, i form av en branschorganisation.

Trafikverket Publikation 2013:062

Borlänge, 1,70 MB, 36 s, 2013

ISBN: 978-91-7467-478-1

Index terms: Car pooling, Development, Administration, Interview, Questionnaire
Ämnesord: Samåkning, Utveckling, Administration, Intervjuer, Enkäter

Hållbar stadsutveckling i praktiken: färdplan för kollektivtrafik i samhällsplanering

Isaksson, Karolina; Ewald, Göran; Hrelja, Robert; Grönlund, Anna; Hägglund, Eva; Pettersson, Fredrik; Dickinson, Joanna; Albertsdottír, Ellen

https://www.transportinnovation.se/system/files_force/dokument/fardplan_kollektivtrafik_grundprincip_slutversion_8dec2014.pdf?download=1

En fungerande kollektivtrafik är en förutsättning för ett hållbart transportsystem men även för att utveckla attraktiva städer och regioner. För att realisera kollektivtrafikens potential behövs en samhällsplanering där kollektivtrafik prioriteras på ett mer konsekvent sätt än vad som görs idag. Det kan handla om att skapa bebyggelse- och trafikstrukturer som kan ge ett stabilt resenärsunderlag och möjliggöra en snabb och effektiv kollektivtrafik till en rimlig kostnad. Det finns mycket kunskap om vilken typ av samhälls- och bebyggelseplanering som krävs för att skapa förutsättningar för en bättre fungerande kollektivtrafik, trots det har det svårt att realisera tankarna i praktiken. Syftet med färdplanen Kollektivtrafik är att hitta insatser som kan påskynda processen med att göra kollektivtrafik till en grundprincip i samhällsplaneringen. Färdplan leder fram till ett antal konkreta förslag på hur vi ska kunna skapa en kollektivtrafik som bidrar till att minska miljö- och klimatpåverkan. För att komma dit krävs en bred samverkan, vilja, engagemang och politiskt mod. Tanken är att färdplanen ska bli ett bidrag i omställningsprocessen.

Forum för innovation inom transportsektorn

Stockholm, 44 s, 0,99 MB, 2014

Index terms: Public transport, Town planning, Regional planning
Ämnesord: Kollektivtrafik, Stadsplanering, Regional planering

Waterway 365: system analysis of challenges in increased urban mobility by utilization of the water ways

Stenius, Ivan; Garme, Karl; Hall Kihl, Susanna; Burman, Magnus

http://www.transportportal.se/vti%20publ/Waterway-365.pdf

Effective transport solutions for goods and people are crucial for the economic development of a region or city. In major cities worldwide there is a lack of capacity in the road and rail network resulting in high costs, only in Stockholm the cost of the overall shortcomings of commuting has been estimated to 6.3 billion SEK annually. The current trend is further increased congestions in major existing commuting routes (roads, rail networks and metro networks). In coastal cities like Stockholm, Gothenburg or Copenhagen however, there are inland waterways that would enable shorter and faster commuting routes if efficient land-sea based transportation systems are implemented. In addition the waterway constitutes an opportunity to create new city space, add transport capacity, offer new communication paths, change the transport flow and level off the pressure on the present transport system. The waterways and parts of the road network are existing infrastructure resources that may be used to contribute to more sustainable travel patterns, reduce congestion on main commuting corridors, increase capacity and the traffic system's resilience through new travel relationships, travel patterns and synergies with bicycle and city logistics. The aim of this work is to identify the most relevant research topics and key performance parameters for personal transport and city logistics systems on the waterways in urban environments for year-round service. The long-term goal is to identify transport systems and technical solutions for the waterways that can be scaled and adapted to urban environments around the world and that complement the land-based transport systems in order to achieve an over-all sustainable urban mobility. This work focuses on a systems engineering perspective and includes identification of system boundaries and interfaces to other public transport, infrastructure nodes, system service and maintenance and measurement of sustainability and service improvement targets. The aim is to develop a base for a system that can be scaled and adapted to urban environments around the world - like how road or rail-based mass transit systems today are built up from more or less standard units, not to design a public transport solution for a specific city, route or line. The focus is on realistic solutions that are both achievable from a cost perspective and attractive to passengers during 365 days a year. New concepts, ranging from small single person commuters up to large public transport systems, are to be explored and evaluated and key technical challenges identified and targeted. The research initiative Waterway 365 was initiated by The Royal

Institute of Technology (KTH) and Vattenbussen AB with support from the Swedish Maritime Administration (Proj. no: 15041-0).

KTH TRITA-AVE 2014-13 1651-7660

Stockholm, 50 s, 2014

ISBN: 978-91-7595-161-4

Planera klimatsmart!: fysiska strukturer för minskad klimatpåverkan

Olvenmyr, Emma; Grandin, Elvira; Sjölin, Eva; Neergaard, Karin; Ljungberg, Caroline; Thidell, Åke

https://www.skane.se/Upload/Webbplatser/Strukturbild/Rapport%20Planera%20klimatsmart%20web.pdf

Genom en medveten stadsplanering är det möjligt att minska påverkan på klimatet, eftersom hur vi bor och reser påverkar klimatet. Uppvärmningen av våra bostäder och våra dagliga transporter står för mer än 60 procent av koldioxidutsläppen. Vi måste kraftfullt begränsa vår energianvändning för att minska våra utsläpp i framtiden. Syftet med rapporten är att visa på den stora potential som finns i hållbar stadsplanering som ett sätt att minska påverkan på vårt klimat. Rapporten tydliggör sambandet mellan fysisk planering och dess påverkan på klimatet och redovisar vilka aspekter av fysisk planering vi måste arbeta med för att nå målet om minskade utsläpp av växthusgaser. Rapporten belyser i första hand planeringen av den rumsliga strukturen och hur transportsystemet är organiserat. De åtgärder som lyfts fram i rapporten är sådana där det finns ett direkt samband mellan fysisk planering och klimatpåverkan genom utsläpp av växthusgaser. Åtgärderna är framförallt aspekter kring lokalisering av exempelvis bostäder och arbetsplatser, den fysiska strukturen för vägnät, bebyggelse, funktioner samt hur människor transporterar sig mellan olika aktiviteter och platser. Rapporten är tänkt att vara ett kunskapsunderlag för politiker och tjänstemän inom Region Skåne och i de skånska kommunerna.

Region Skåne

FOJAB arkitekter

Kristianstad, 84 s, 17,51 MB, 2014

Index terms: Sustainable transport, Walking, Cycling, Public transport, Town centre, Town planning, Specifications
Ämnesord: Hållbara transporter, Gång, Cykling, Kollektivtrafik, Stadskärnor, Stadsplanering, Riktlinjer

Miljöperspektiv på butikslägen och konsumtionsresor

Rudholm, Niklas; Hansen, Fredrik

http://www.hur.nu/wp-content/uploads/2014/07/2014-1-Miljoperspektiv-pa-butikslagen-och-konsumtionsresor.pdf

Goda lokaliseringsval av handelsföretag effektiviserar och underlättar utbytet mellan producent och konsument och utgör därmed en mycket central och betydelsefull roll i ekonomin. För att lättare tillgodogöra sig nyttan av en god tillgänglighet och för att göra det möjligt för konsumenten att göra alla sina inköp vid ett tillfälle så har handeln under senare tid genomgått en strukturomvandling mot allt större butiker, ofta lokaliserade i externa köpcentrum. Externa lokaliseringar av detta slag medför dock ett ökat behov av att konsumenten är bilburen vilket skulle kunna leda till ökade utsläpp av koldioxid. Trots betydelsen av goda lokaliseringsval inom handelssektorn för såväl ekonomi som miljö finns det mycket få vetenskapliga studier som har studerat dessa frågor. Speciellt bristfälligt är kunskapsläget kring vilka miljöeffekter handelns strukturomvandling lett till, främst med avseende på den ökade externhandeln. I forskningsprojektet ”Hur påverkar handelns strukturomvandling miljön?”, som finansierats av Handelns Utvecklingsråd, har HUI Research i samarbete med Högskolan Dalarna därför studerat hur handelsföretagens lokaliseringsval och konsumenters resor påverkat miljön med ett särskilt fokus på konsumenternas koldioxidutsläpp. Forskningen har inriktats på att besvara följande forskningsfrågor: 1. Hur bra är handelns lokaliseringar i ett miljöperspektiv och hur kan detta mätas? 2. Hur påverkar konsumenternas resor till etablerade handelsplatser miljön och hur kan detta mätas? 3. Hur kommer handelsföretagens etablerings- och investeringsbeteende långsiktigt att påverkas av Sternrapporten och ändrade miljöregleringar?; Executive summary: http://www.hur.nu/wp-content/uploads/2014/07/2014-1-Miljoperspektiv-pa-butikslagen-och-konsumtionsresor-Exsum.pdf

Handelns Utvecklingsråd Forskningsrapport 2014:1

Stockholm, 32 s, 514 kB, 2014

ISBN: 987-91-86508-19-7

Index terms: Shop, Shopping centre, Location, Journey, Carbon dioxide, Emission, Impact study (environment), Measurement, Calculation
Ämnesord: Butiker, Köpcentrum, Läge, Resor, Koldioxid, Emissioner, Miljöpåverkan, Mätning, Beräkning

Measuring CO2 emissions induced by online and brick-and-mortar retailing

Carling, Kenneth; Han, Mengjie; Håkansson, Johan; Meng, Xiangli; Rudholm, Niklas

http://du.diva-portal.org/smash/get/diva2:750036/FULLTEXT02.pdf

We develop a method for empirically measuring the difference in carbon footprint between traditional and online retailing ("e-tailing") from entry point to a geographical area to consumer residence. The method only requires data on the locations of brick-and-mortar stores, online delivery points, and residences of the region's population, and on the goods transportation networks in the studied region. Such data are readily available in most countries, so the method is not country or region specific. The method has been evaluated using data from the Dalecarlia region in Sweden, and is shown to be robust to all assumptions made. In our empirical example, the results indicate that the average distance from consumer residence to a brick-and-mortar retailer is 48.54 km in the studied region, while the average distance to an online delivery point is 6.7 km. The results also indicate that e-tailing increases the average distance traveled from the regional entry point to the delivery point from 47.15 km for a brick-and-mortar store to 122.75 km for the online delivery points. However, as professional carriers transport the products in bulk to stores or online delivery points, which is more efficient than consumers' transporting the products to their residences, the results indicate that consumers switching from traditional to e-tailing on average reduce their CO2 footprints by 84% when buying standard consumer electronics products.

Högskolan Dalarna Working papers in transport, tourism, information technology and microdata analysis 2014:14 1650-5581

Borlänge, 32 s, 457 kB, 2014

Index terms: E commerce, Shop, Journey, Freight transport, Delivery, Carbon dioxide, Emission, Calculation
Ämnesord: Elektronisk handel, Butiker, Resor, Godstransporter, Leverans, Koldioxid, Emissioner, Beräkning

Färdplan Citylogistik: godstransporter i urbana områden

Lindholm, Maria; Björklund, Maria; Abrahamsson, Mats; Behrens, Sönke; Karlsson, Jenny; Lundgren, Stig; Löfstrand, Sofia; Mårtensson, Cecilia; Ekmark, Anders; Arvidsson, Tomas

http://liu.diva-portal.org/smash/get/diva2:716100/FULLTEXT01.pdf

Denna rapport är indelad i fem avsnitt. Inledningsvis presenteras problem och målbild. Dessa kapitel syftar till att skapa en bild av den övergripande situationen, förstå varför det är viktigt att arbeta med frågan citylogistik och förklara de mål som satts upp. Därefter presenteras nuläge och förutsättningar. Detta ger en bild av hur situationen ser ut i Sverige idag. Här presenteras även de innovationsdomäner som hanteras i rapporten och aktiviteter sorteras in inom. Milstolpar och tänkbara koncept presenterar inledningsvis en bruttolista på aktiviteter som krävs för att nå målen, men ger sedan en inriktning i form av nästa steg av vilka av dessa aktiviteter som bör prioriteras i nuläget. Förslag på demonstrationsprojekt presenteras följt av en koppling till omvärlden (EU). Färdplanen avslutas med en SWOT analys och tänkbar påverkan samt två appendix: Arbetsprocessen kring färdplanens framtagande, samt Aktivitetslista.

CLOSER

Forum för innovation inom transportsektorn

Göteborg, version 3, 30 s, 2014

Index terms: Freight transport, Delivery, Logistics, Urban area
Ämnesord: Godstransporter, Leverans, Logistik, Tätorter

Smart cities and climate targets: reducing cities' energy use with ICT and travel information

Kramers, Anna

http://kth.diva-portal.org/smash/record.jsf?pid=diva2%3A751909&dswid=-9190

Denna avhandling undersöker hur informations- och kommunikationsteknologi (IKT) kan användas till att bidra till minskning av energianvändning i städer och därmed bidra till att nå städers klimatmål. Den undersöker hur städers klimatmål kan utvecklas på ett konsekvent och transparent sätt, hur de mest lovande IKT-lösningarna kan identifieras när det gäller att minska invånarnas energianvändning och hur de kan ingå i stadsplanering. Genomförande av principer för mobility management samt samhälleliga mål testas i två befintliga lösningar, - ett resenärsinformationssystem och en flexibel arbetsplatslösning. Fyra centrala metodologiska överväganden för att bestämma städers klimatmål identifieras. Dessa gäller: föremålet för målformuleringen, den tidsmässiga omfattningen, mätenheten och målets räckvidd. Ett verktyg togs fram för att identifiera de IKT- lösningarna som är mest lovande vad gäller att minska stadsbornas energianvändning. Verktyget kan också användas för att observera de identifierade IKT-lösningarnas utnyttjandegrad samt de tekniska och sociotekniska svårigheter som är förenade med införande. I en fallstudie i Storstockholmsområdet identifierades de IKT-lösningar som var mest lovande: intelligenta värmesystem för byggnader, intelligenta transportsystem samt den potentiella förändringen av den fysiska miljön (byggnader och vägar) som görs möjliggörs av IKT-lösningar. Två aspekter av planering som identifierats som avgörande för ett framgångsrikt införande av energibesparande IKT-lösningar har studerats i detalj: i) Tidpunkten för IKT-relaterade beslut i planeringsprocessen; och ii) de aktörsnätverk som behövs för att införa och förvalta IKT-lösningarna. Det finns få beslutspunkter i den aktuella planeringen vilket gör att beslutsprocessen och kommunens roll som fastighetsägare är av avgörande betydelse. Två strategier för samarbete föreslås, styrning genom samordning i nätverk och samordning via metastyrning (indirekt styrning). En undersökning av nio reseplanerare och en fallstudie i Stockholm av flexibla arbetsplatslösningar visade att mobility management metoder för att minska efterfrågan på transporter och uppmuntra miljövänliga transportsätt inte återspeglas tillräckligt i genomförandet. För att stödja mobility management-principer bör resenärsinformations-system främst erbjuda, eller integreras med andra lösningar som stödjer valen ”ingen resa” och ”kortare resa”. Hubbar för flexibla arbetsplatser bör placeras i lokala noder närmare bostäder. De viktigaste slutsatserna i denna avhandling är att IKT-lösningar kan modifieras för att stödja städers klimatmål och att klimatmål måste definieras med hjälp av transparenta metoder för att säkerställa att de mest lovande IKT-lösningar för energiminskning införs.

KTH Royal Institute of Technology. Department of Sustainable Development, Environmental Science and Engineering TRITA-FMS-PHD 2014:01

Stockholm, 67 s, 1,21 MB, 2014

ISBN: 978-91-7595-265-9

Övrig info: Endast kappan. Saknar de 5 uppsatserna.

Index terms: Passenger information, Mobility management, Sustainable transport, Place of work, Thesis
Ämnesord: Resenärsinformation, Mobility management, Hållbara transporter, Arbetplatser, Doktorsavhandling

Byforandringer: evne og vilje at forandre en by

Duus, Signe

I Köpenhamn 28-29.4.2014 höll Utskottet för strategisk planering ett arbetsmöte i samband med ett öppet seminarium ” Evne og vilje til at forandre en by”, som ordnades tillsammans med utskotten Miljö och Transport i städer. Seminariet hade ett aktivt och välbalanserat innehåll mellan frågorna om miljö, mobilitet och planläggning. Seminariet var väl bemannat och diskussionen livlig. Publikationen ”Byforandringer, Evne og vilje at forandre en by” utgavs i september.

Nordisk Vejforum, NVF

Köpenhamn, 31 s, 2014

ISBN: 978-87-93184-14-5, 978-87-93184-15-2

Övrig info: Nordiskt Vägforum

Index terms: Town planning, Mobility management, Sustainability, Urban development, Traffic restraint, Case study
Ämnesord: Stadsplanering, Mobility management, Hållbar utveckling, Stadsutveckling, Trafikbegränsning, Fallstudier

Kollektivtrafik på vatten - potentialbeskrivning region väst: en delrapport inom forsknings- och innovationsprojektet ”Koll på vatten”, kollektivtrafik på urbana vattenvägar - ökad kunskap och studie av potential för region väst

Hall Kihl, Susanna; Persson, Axel; Sjöstrand, Helena; Sundberg, Rasmus; Fält, Sebastian

http://www.transportportal.se/vti%20publ/Kollektivtrafik-på-vatten.pdf

För att erbjuda en hållbar lösning på städernas framväxt samtidigt som kraven på ytanvändning förändras måste transporterna bli mer yteffektiva och resurssnåla. En möjlighet att uppnå detta i Sverige kan vara att i en högre grad utnyttja vattenvägarna, ofta i direkt anslutning till våra städer, till att öka kollektivtrafikens kapacitet, men även till att generera nya resmöjligheter och förändrade resebeteenden. Kunskapen om potentialen i att utnyttja vattenvägarna är idag generellt låg. Denna rapport syftar till att stärka kunskapen om hur olika typer av kollektivtrafik på vatten kan bidra till ökad tillgänglighet och erbjuda alternativa transportvägar framöver i den allt hårdare konkurrensen om ytorna på land i de urbana områdena i region väst.

Trivector Traffic Rapport 2014:28

Lund, 70 s, 2014

Parkeringsnormer i utvalgte norske og svenske byer: status og effekter på bilinnehav, adferd og økonomi

Hanssen, Jan Usterud; Aretun, Åsa; Fearnley, Nils; Hrelja, Robert; Christiansen, Petter

https://www.toi.no/getfile.php/Publikasjoner/T%C3%98I%20rapporter/2014/1311-2014/1311-hele%20rapporten.pdf

Bakgrunnen for og utvikling av parkerings-normene i noen svenske og norske byer er beskrevet og kommentert. Normene for næring har i mange tilfeller blitt mer restriktive over tid. For bolig er det i hovedsak et mål å kreve et tilstrekkelige antall parkeringsplasser til å samsvare med bilholdet. Dette betyr at byene ikke bruker normene for å påvirke husholdenes bilhold, men bilbruken kan påvirkes av restriktive normer ved reisers målpunkt. Gjennomgangen er supplert med litteratur-studier med utgangspunkt i økonomi og planlegging. Det konkluderes at det er få studier der det har blitt sett spesielt på hvordan tilgjengelighet til og organisering av parkering ved boligene påvirker individers og husholds økonomi og bilbruk.

Transportøkonomisk institutt TØI rapport 1311 0808-1190

Oslo, 108 s, 1,21 MB, 2014

ISBN: 978-82-480-1514-7

Index terms: Parking, Policy, Specifications, Urban area, Residential area, Town planning, Impact study, Vehicle ownership, Journey, Car
Ämnesord: Parkering, Policy, Riktlinjer, Tätorter, Bostadsområden, Stadsplanering, Effektstudier, Fordonsinnehav, Resor, Bilar
Extra ämnesord: Färdmedelsval

From vision to transition: exploring the potential for public information services to facilitate sustainable urban transport

Cano-Viktorsson, Carlos

http://kth.diva-portal.org/smash/get/diva2:706104/FULLTEXT01.pdf

Background: Policy initiatives to promote sustainable travel through the use of Internet based public information systems have increased during the last decade. Stockholm, in being one of the first cities in Europe to implement an Internet based service for facilitating sustainable travel is believed to be a good candidate for an analysis of key issues for developing sustainable travel planning services to the public. This thesis investigates the past development of two Stockholm based public information systems and their services in order to draw lessons on how to better provide for a public information service geared towards facilitating environmentally sustainable travel planning through information and communications technology. The overall goal of the thesis is to contribute to an understanding on how to better design and manage current and future attempts at facilitating sustainable travel planning services based on historical case studies. The thesis draws ideas from the concept of organizational responsiveness – an organization's ability to listen, understand and respond to demands put to it by its internal and external stakeholders – in order to depict how well or not the two public information systems and their owners have adapted to established norms and values of their surroundings. Overall, the findings from the historical case studies suggest that organizations attempting to provide sustainable travel planning to the public need to design and manage their systems in such a way that it responds to shifting demands on how to provide for information. Implementing and embedding new technologies involves complex processes of change both at the micro level – for users and practitioners of the service – and at the meso level for the involved public service organizations themselves. This condition requires a contextualist framework to analyze and understand organizational, contextual and cultural issues involved in the adoption of new technologies and procedures. The thesis concludes with a discussion on how the findings from the historical case studies may provide lessons for both current and future attempts at providing public information systems geared towards facilitating environmentally sustainable travel planning to the public. Historical examples and issues concerning collective intelligence and peer to peer based forms of designing, producing and supervising public information services identified throughout the study are looked upon and discussed in terms of their possible role in increasing the potential for public information services to facilitate sustainable urban transport.

KTH. Royal Institute of Technology. School of Architecture and the Built Environment TRITA-HOT 2069 0349-2842

Skolan för arkitektur och samhällsbyggnad

Skolan för datavetenskap och kommunikation

Stockholm, 50 s, 2014

ISBN: 978-91-7595-055-6

Index terms: Driver information, Passenger information, Communication, Radio, Mobile phone, Web site
Ämnesord: Förarinformation, Resenärsinformation, Kommunikation, Radio, Mobiltelefoner, Webbplatser

Rebound effects of energy efficiency measures in the transport sector in Sweden

Jägerbrand, Annika K; Dickinson, Joanna; Mellin, Anna; Viklund, Mattias; Dahlberg, Staffan

http://urn.kb.se/resolve?urn=urn:nbn:se:vti:diva-6929

Rekyleffekter är skillnaden mellan den förväntade eller beräknade energibesparingen och den verkliga energibesparingen för olika typer av åtgärder. Om detta inte tas med i beräkningar kan rekyleffekter motverka politiska åtgärder så att mål relaterade till energi och utsläpp inte uppnås eller blir försenade. Målet med denna rapport är att göra en litteraturöversikt och att identifiera kunskapsluckor. Följande områden tas upp: fordon och bränslen, persontransporter, vägtransporter, luftfart, godstransporter, sjöfart, teknisk utveckling och utomhusbelysning. Direkta, indirekta och ekonomiövergripande rekyleffekter tas upp och även exempel på rekyleffekter i transportplaneringen. Rekyleffekter är också diskuterade ur aspekter av miljömedvetande och hur de hanteras i transport- och samhällsplaneringen. Vi har också identifierat områden som saknar väsentlig information om rekyleffekter. Sammanfattningsvis så tyder våra resultat på att rekyleffekter förekommer i olika storlekar och att det finns stor risk att energieffektiviseringsåtgärder inom transportsektorn överför energibesparingarna till andra typer av transportslag, sektorer eller energitjänster vilket kan resultera i förlorade eller inga energibesparingar eller ännu värre, en ökad energikonsumtion. Därför bör rekyleffekter beräknas för att Sverige skall nå sina klimat- och energimål. Detta gäller speciellt inom transportsektorn där rekyleffekterna antas vara särskilt stora inom vissa transportslag och över tiden.

VTI rapport 827A 0347-6030

Linköping, 78 s + bil (19 s), 2,75 MB, 2014

Index terms: Fuel consumption, Energy consumption, Emission, Emission control, Policy, Method, Tax, Mobility management, Evaluation (assessment), Carbon dioxide
Ämnesord: Bränsleförbrukning, Energiförbrukning, Emissioner, Emissionskontroll, Policy, Metoder, Skatter, Mobility management, Utvärdering, Koldioxid

Klimatsmarta energisystem: barriärer och inspiration till handling: PRINCIP, huvudaktivitet 3

Ljungkvist, Hanna; Eriksson, Elin; Ekvall, Tomas; Bolin, Lisa; Adolfsson, Ida

http://www.ivl.se/download/18.21d4e98614280ba6d9e3a46/1390548752574/C7+Rapport+HA3+final.pdf

I den första aktiviteten i projektet PRINCIP så framkom det att potentialerna att minska klimatpåverkan från energisystemen i Göteborg, Ålborg och Fredrikshamn är stora. I Göteborg kan utsläppen minska med cirka 50 procent om alal potentialer utnyttjades.Än behvös tekniken för energieffektivisering utvecklas och förfinas, men det är inte alltid tekniken som sätter stopp för energieffektivisering eller användandet av förnybar energi. Det finns annat som hindrar de åtgärder som är nödvändiga för att uppnå lokala och globala miljömål.I denan rapport diskuteras tre områden med avseende på hinder och lösningar: energirenovering av byggnader; hållbara transportlösningar; dagligvaruhandel och livsmedelsverksamheter.

IVL. Svenska Miljöinstitutet IVL rapport C 7

Göteborg, 51 s, 2014

Index terms: Energy, Energy conservation, Emission control, Greenhouse gas, Sustainability, Sustainable transport
Ämnesord: Energi, Energihushållning, Emissionskontroll, Växthusgaser, Hållbar utveckling, Hållbara transporter

Is sustainable transport policy sustainable?

Eliasson, Jonas; Proost, Stef

http://swopec.hhs.se/ctswps/abs/ctswps2014_002.htm

The paper challenges the existing sustainable transport literature. Most sustainable transport plans focus on the reduction of greenhouse gas emissions in either one region or country and this neglects two handicaps of strong unilateral action. The first is that climate is a global commons problem so a strong binding international climate agreement is unlikely. The second is that a unilateral reduction of oil consumption by a limited number of countries will be partially, or even completely, offset by market responses – in some circumstances, cumulative emissions may even come earlier (the "green paradox"). When a coalition of the willing reduces oil use in the transport sector, this will delay rather than reduce total emissions. This requires rethinking climate policies for the transport sector: what policies remain cost effective in reducing greenhouse gas emissions?

Centre for Transport Studies Stockholm Working papers in Transport Economics 2014:2

VTI

KTH Royal Institute of Technology

S-WoPEc, Scandinavian Working Papers in Economics

Stockholm, 18 s, 923 kB, 2014

Index terms: Greenhouse gas, Emission control, Policy, Method, Oil, Fuel consumption
Ämnesord: Växthusgaser, Emissionskontroll, Policy, Metoder, Olja, Bränsleförbrukning

Varför gör vi inte som vi säger?: realitet, retorik och dialektik i svensk stadsutveckling med fokus på energi och fysiska strukturer

Svensson, Tony

http://www.diva-portal.org/smash/get/diva2:808780/FULLTEXT01.pdf

In this doctoral thesis, case-studies on comprehensive planning and urban development in two Swedish municipalities reveals explanations and answers to how urban form that affects energy use and climate has changed between 1990-2010, how visions and goals are expressed in planning documents and what might cause the gap between the rhetoric of planning and the reality of urban development concerning energy and climate issues. Several methods are used under the canopy of case study methodology and an abductive research approach; time-series analysis with GIS-indicators to measure changes in urban structure; discourse analysis with a focus on rhetoric and interviews with responsible planning officials using a range of dialectics-based concepts as a framework to reveal hidden structures and mechanisms behind the gap. Findings indicate that the dynamics of planning and urban development in the last decades displays traits similar to dynamics of complex adaptive systems such as non-linearity, path-dependency, increasing diversity, emergent self-organized order and the influence of 'internal models'. These traits are considered to be one part of the explanation to the gap, but the case-studies also show the importance of the dialectical interplay between structure and agency in terms of organisation, coalitions, institutional capacity and the local repertoire of manipulative strategies in the exercise of power. Parallel trajectories of development such as both densification and sprawl, hidden behind a rhetorical cloak of sustainability and attractiveness, indicates the existence of multiple worlds of conception in the perspectives of different actors. Actors´ cognitive limitations and the structuration of powerful figures of thought further points to a conclusion that planning is, to a large extent, entrapped within the deeply established figures of neo-liberal economic thought, preventing a synthesis of energy- and climate issues with urban development and pushing the systems perspective on energy in planning into 'otherness'.

Kungliga tekniska högskolan. Institutionen för samhällsplanering och miljö TRITA-SoM 2015-04 1653-6126

Stockholm, 371 s, 10,72 MB, 2015

ISBN: 978-91-7595-508-4

Impact of the proposed energy efficiency regulation on Baltic tankers and bulkers

Eronen, Harri; Riska, Kaj

http://www.transportportal.se/shipdocs/spec/15344-Report_No_77_Impact_of_the_proposed_energy_efficiency_regulation_on_baltic_tankers_and_bulkers.pdf

The regulation on the energy efficiency of ships that is discussed at the International Maritime Organization (IMO) at present is going to be based on an Energy Efficiency Design Index, EEDI, that can be calculated for each ship. The calculated EEDI ('attained EEDI') must be below certain value called the reference line (RL). The energy efficiency regulation does not apply to all ships, especially RORO, ROPAX and PAX ships are at present outside the scope of the planned regulation. Also the ship size measured by deadweight, dwt, sets the applicability limit; smaller ships are outside the scope of regulation. The EEDI calculation contains correction factors for ships having a Finnish-Swedish ice class; these factors should make these ice class ships comparable with open water ships. This report is concerned especially with ice classed ships as most of the ships under the Finnish flag have an ice class. The study contains four different topics: • The impact of energy efficiency regulation on the Finnish merchant fleet; • Energy efficiency in the winter navigation system; • Ways to improve the energy efficiency of ice class ships and • The possible conflict between the minimum propulsion power required by the ice class rules and the maximum power allowed by the energy efficiency regulations.

Sjöfartsverket

Sjöfartsstyrelsen (Finland)

Styrelsen för vintersjöfartsforskning Research report 77 0348-9485

Helsingfors, 44 s, 1,58 MB, 2014

ISBN: 978-952-311-026-7

Index terms: Energy consumption, Ship, Ice, Classification, Fuel consumption
Ämnesord: Energiförbrukning, Fartyg, Is, Klassificering, Bränsleförbrukning

Possibilities to decrease the attained EEDI of the Finnish merchant ships

Eronen, Harri; Riska, Kaj

http://www.transportportal.se/shipdocs/spec/15345-Report_No_78_Possibilities_to_decrease_the_attained_EEDI_of_the_Finnish_merchant_ships.pdf

A study about the impact of the proposed energy efficiency regulation at IMO (International Maritime Organization) on the Baltic bulkers and tankers was carried out in April – May 2011. The study focused on the attained EEDI (Energy Efficiency Design Index) and the means to decrease it, preferably below the reference lines developed by the IMO secretariat. The study concentrated on two example ships, MS Eira and MT Jurmo, and ships derived from these. The results of the study suggested that it is very difficult to achieve the required EEDI, especially taking into account the new reference lines. Before deciding about any action to make the future legislation more suitable for ice class tonnage, it was decided to check the impact on all the ships flying the Finnish flag of the required EEDI. The present report details the results from analyzing the Finnish merchant ship fleet.

Sjöfartsverket

Sjöfartsstyrelsen (Finland)

Styrelsen för vintersjöfartsforskning Research report 78 0348-9485

Helsingfors, 24 s, 393 kB, 2014

ISBN: 978-952-311-027-4

Index terms: Energy consumption, Fuel consumption, Ship, Ice, Classification, Calculation
Ämnesord: Energiförbrukning, Bränsleförbrukning, Fartyg, Is, Klassificering, Beräkning

Energy efficiency of the Baltic winter navigation system

Riska, Kaj

http://www.transportportal.se/shipdocs/spec/15350-Report_No_83_Energy_efficiency_of_the_Baltic_winter_navigation_system.pdf

The winter navigation system consists of merchant ships that have some ice performance escorted by icebreakers. The system includes ice performance requirements that are set in the Finnish-Swedish Ice Class Rules. The restriction for the attained Energy Efficiency Design Index (EEDI) operates essentially as a power ceiling for ships. The ice classed ships must use higher power than open water ships in order to proceed in ice. This handicap is compensated for with some ice class correction factors introduced into the attained EEDI equation. These factors should convert the power and deadweight of an average ice class ship to be the same as an average open water ship. The effect of the ice class correction factors is largest for an average ice class ship and thus any extra power beyond the minimum ice class requirements is penalized. This will have an impact on the winter navigation system in forcing the designers to find energy efficient designs with a good ice performance and in forcing an increase in icebreaker services in order to maintain an efficient and fluent navigation system. In this study the energy efficiency of the winter navigation system is calculated. The energy consumption of the winter navigation system to northern Finland is calculated including both the energy consumption of the merchant ships and the icebreakers.

Sjöfartsverket

Sjöfartsstyrelsen (Finland)

Styrelsen för vintersjöfartsforskning Research report 83 0348-9485

Helsingfors, 19 s, 244 kB, 2014

ISBN: 978-952-311-032-8

Index terms: Fuel consumption, Energy consumption, Calculation, Ship, Maritime transport, Winter, Ice, Sea
Ämnesord: Bränsleförbrukning, Energiförbrukning, Beräkning, Fartyg, Sjöfart, Vinter, Is, Hav
Extra ämnesord: Isbrytare

EEDI and Finnish-Swedish ice class rules: impact study and operational aspects

Westerberg, Victor; Karlsson, Roger

http://www.transportportal.se/shipdocs/spec/15355-Report_No_88_EEDI_and_Finnish-Swedish_ice_class_rules.pdf

The Energy Efficiency Design Index (EEDI) has been developed within IMO and MEPC. The purpose is to increase the energy efficiency of the world merchant fleet and to reduce the emissions of greenhouse gases. This study puts focus on EEDI and its consequences on the Baltic winter navigational operations. EEDI is calculated and compared to relevant baselines, ice class correction factors are investigated, interactions with the output power regulations in the Finnish-Swedish ice class are analysed and possible consequences are highlighted. Vessels included in the study have thoroughly been selected through traffic analysis, received by AIS-data, to represent a normal population sailing in the Bay of Bothnia and the Bothnian Sea during the winter season. The results of the performed calculations are presented and followed by discussion as well as conclusions on the possible effects of EEDI on the winter navigational operations.

Sjöfartsverket

Sjöfartsstyrelsen (Finland)

Styrelsen för vintersjöfartsforskning Research report 88 0348-9485

Helsingfors, 110 s, 2,78 MB, 2014

ISBN: 978-952-311-037-3

Index terms: Ice, Sea, Classification, Ship, Fuel consumption
Ämnesord: Is, Hav, Klassificering, Fartyg, Bränsleförbrukning

Hållbar utveckling på ett rederi: med specifikt fokus på färskvattenförbrukning

Vaara, Tanja

http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-58636

Denna studie visar en tolkning av begreppet hållbar utveckling samtidigt som den konkretiseras i den specifika fartygsverksamheten. Detta examensarbete skall fungera som underlag till en utbildning som har som syfte att få befälsnivån att arbeta mot en mer hållbar utveckling. I samband med utbildningen är det viktigt att komma ihåg att målet är att öka medvetenheten hos befälsnivån så att risken minimeras för att de fattar dåliga beslut. Målet är även att befälsnivån skall känna att de har bättre verktyg än före utbildningen för att arbeta mot en mer hållbar utveckling. Det är viktigt att befälsnivån får med sig förståelsen för hur de tre dimensionerna ekologi, ekonomi och sociala aspekter hänger samman. Befälsnivån skall ha förståelse för att hållbar utveckling är uppnådd när förbättringar i en dimension också leder till förbättringar i en annan dimension (SOU 2004:104). Befälsnivån skall ansvarfullt inse att den ekologiska bärkraften är viktigast för allt liv och därmed också inse att om exempelvis ekonomisk tillväxt är baserad på en produktion som är mindre miljöanpassad än tidigare alternativ så är utvecklingen inte hållbar. För att få befälsnivån att arbeta mot en mer hållbar utveckling har alla tre dimensioner sina egna drivkrafter som skall uppmärksammas före beslut om förändring. Det ekologiska är givet, då vi är beroende av vår miljö, det sociala kan vara allt från påtryckningar från ledningen till krav från arbetskamrater och kunder. De ekonomiska drivkrafterna kan i sin tur också vara många där styrmedel är det mest framträdande. Det har dock visat sig att exempelvis miljöåtgärder som innebär ekonomisk vinning inte behöver formell styrning. Denna självreglering leder till att verksamheten själv önskar att initiera åtgärder till förmån för hållbar utveckling. I denna studie framhävs därmed också betydelsen av utbildningen och betydelsen av utbildningens innehåll ur en pedagogisk synvinkel. I rapporten påpekas också vikten av att ledningen är den som skall se till att de anställda har rätta verktygen för att genomföra förändringar och utvecklas. Det bör dock noteras att i samband med färskvattenförbrukningens minskning har inte hänsyn tagits till kundernas beteende. En tydligare kartläggning av de olika kundsegmentens vattenförbrukning är en bra framtida studiemöjlighet.; För att upprätthålla arbetet mot en mer hållbar utveckling är det av ytterst vikt att en processmodell där utvärdering anses spela en viktig roll finns att tillgå. För minskning av färskvattenförbrukning presenteras en åtgärdsplan samt andra förslag som utbyte av exempelvis duschmunstycken som på längre sikt kan leda till en större minskning av färskvattenförbrukningen.

Kungliga tekniska högskolan (KTH). Industriell Ekologi TRITA-IM 2010:17 1402-7615

Stockholm, 68 s, 492,98 kB, 2010

Index terms: Water, Use, Ship, Policy, Management, Sustainability
Ämnesord: Vatten, Användning, Fartyg, Policy, Ledning och organisation, Hållbar utveckling

Inventory and evaluation of environmental performance indices for shipping

Svensson, Erik; Andersson, Karin

http://publications.lib.chalmers.se/records/fulltext/162305.pdf

Increased demand for environmental, energy and sustainability information on products in a life cycle perspective has led to the development of a large number of different voluntary initiatives aimed at communicating the environmental performance of sea transport, such as databases, indices, labels and certificates. There is however a lack of scientific studies that applies the research area of environmental indices to shipping. The majority of previous studies on environmental indices for shipping have focused on comparing indices or to find successful parameters for developing a new index. This study has conducted an inventory of environmental initiatives applicable for communicating environmental performance of ships and shipowners. It has then identified and evaluated voluntary initiatives that are based on an indexing system; defined as 'environmental performance indices'. The evaluation was conducted on three indices based on principal aspects and criteria found in literature. The results of the inventory showed a large diversity of 38 environmental performance initiatives related to a diversity of stakeholders. They had different scope, target groups and applications. Most existing initiatives are based on a set of environmental requirements or standards, where specific installed equipment, operational measures, management aspects or compliance with environmental legislation are rewarded in one way or another. Such rewards could be score points or for example reduced port dues. Some initiatives were however based on environmental performance data such as specific emission levels. Many further focused on air emissions and energy efficiency or carbon dioxide emissions. Ten initiatives were identified as environmental performance indices, though their inclusion within this definition was later discussed in further analysis. The following three indices were evaluated: (1) the Energy Efficiency Operational Indicator developed by the International Maritime Organization, (2) the Performance Metrics Tool developed by Clean Cargo Working Group, and (3) the Clean Shipping Index developed by the Clean Shipping Project. The indices each assess environmental performance based on data for individual vessels, which then is aggregated into a final index. The last two indices use scoring systems for different environmental areas and include performance requirements. These indices could be used for a shipowner to benchmark and market environmental performance of their ships, and for a transport buyer to select the ships and shipowners according to their performance results. Third-party verification exists for all three indices, which provides quality control of the data used for the performance assessment. It was concluded that the three indices have many similarities, though they show a large variation in their construction and application. The varieties of the three indices could be explained by the variety of stakeholders connected to them. It was concluded that the properties of a particular index depend on the indented use, which in turn depends on the intended users and the developer of the index. It was further concluded that the variety of different initiatives is problematic and shows a need for global standardized methods. The study could contribute to bring order to the variety of concepts of the different initiatives associated with environmental ship indices. It could also identify potential uses and users of the indices. In addition, it could be one way of solving methodological problems of comparison between different indices identified in earlier studies.

Chalmers tekniska högskola. Institutionen för sjöfart och marin teknik Report R / Department of Shipping and Marine Technology, Chalmers University of Technology, Gothenburg, Sweden 11:132 1652-9189

Göteborg, 71 s, 894 kB, 2011

Index terms: Ship, Emission, Fuel consumption, Energy consumption, Measurement, Classification, Environment protection
Ämnesord: Fartyg, Emissioner, Bränsleförbrukning, Energiförbrukning, Mätning, Klassificering, Miljöskydd

Capacity utilisation in short sea shipping

Styhre, Linda

Shipping is a capital-intensive industry and is characterised by high fixed costs and economies of scale. Trade imbalances and demand variations, market fluctuations and customer demands for high frequency create a situation where shipping companies tend to operate with a high level of unutilised vessel capacity. The purpose of the research is to identify the potential for enhancement of the physical vessel capacity utilisation, with the aim of reducing the cost per transported unit. The research is based on both qualitative and quantitative data included in three studies of short sea vessel concepts: ferries, RoRo vessels and container feeders. Vessel capacity utilisation can be enhanced by applying short-term and long-term measures and by counterbalancing supply and demand. Appropriate vessel design, efficient sailing schedules, stand-by cargo, price differentiation and improved communication between companies in the transport chain are among the most important improvement measures. Two approaches are available when matching supply and demand: to increase demand through larger market share, and to change supply in smaller and more frequent steps. Route characteristics and market conditions all affect the selection of an appropriate strategy for enhancement of vessel capacity utilisation. The different approaches are: the Cut peaks strategy, the Never say no strategy, or a combination of the two. The purpose of the Cut peaks strategy is to have a high average capacity utilisation by keeping the maximum capacity lower or increasing the market share. The Never say no strategy allows a higher level of unutilised capacity in order to have good flexibility, a possibility to grow in the market, and the ability to maintain a high service level. Knowledge gained from the research resulted in a framework for short sea shipping companies that are aiming at enhancing their vessel capacity utilisation. The framework consists of four elements: selection of capacity utilisation strategy, definition of sailing schedule, improvement measures for established vessel capacity, and improvement measures for changes in vessel capacity. The main objective of applying a conscious strategy and suitable improvement measures is to attain a long-term economic sustainable shipping service with a reasonable service level, flexibility and reliability towards customers. Consequently, both shipping companies and shippers benefit from the enhancement. Furthermore, society also gains if goods can be moved from road to sea, as short sea shipping is efficient in terms of environmental performance and energy efficiency and can ease road congestion.

Chalmers University of Technology. Department of Technology Management and Economics
Doktorsavhandlingar vid Chalmers tekniska högskola. Ny serie 3102

Göteborg, 211 s, 2010

ISBN: 9789173854214

Index terms: Ship, Ferry, Capacity (veh), Passenger, Freight, Efficiency, Route (itinerary), Timetable, Maritime transport, Freight transport, Passenger transport, Thesis
Ämnesord: Fartyg, Färjor, Kapacitet (fordon), Passagerare, Gods, Effektivitet, Rutter, Tidtabeller, Sjöfart, Godstransporter, Persontransporter, Doktorsavhandling

The Berth-Scheduling Problem: Maximizing Berth Productivity and Minimizing Fuel Consumption and Emissions Production

Golias, Mihalis; Boile, Maria; Theofanis, Sotiris; Efstathiou, Christos

http://dx.doi.org/10.3141/2166-03

This paper presents a new formulation for the discrete space berth-scheduling problem at marine container terminals. This formulation reflects an environmentally friendly berth-scheduling policy with the objectives of (a) maximizing berth productivity by minimizing the total service time and delayed departures for all vessels and (b) minimizing the total emissions and fuel consumption for all vessels while in transit to their next port of call. A genetic algorithms-based heuristic is presented to solve the resulting problem, and computational examples are presented to evaluate the proposed berth-scheduling policy.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2166, s 20-27, 2010

ISBN: 9780309142991

Potential fuel savings from operational measures in sea transport

Slotte, Andreas; Swahn, Magnus

https://online4.ineko.se/trafikverket

The Swedish Transport Administration, initiated a project regarding the potential fuel saving from operational measures in sea transport in 2011. The project has been financed by the Swedish Transport Administration. The opinions, findings and conclusions expressed in this publication are those of the authors and not necessarily those of the Swedish Transport Administration. Sea transport includes various transport operation from shipper to consignee via ports. The operation is carried out by either dedicated vessels or transport operation through shared vessels. The dedicated sea transport services are often carried out by ships for general cargo or bulk cargo i.e. specially designed for the shipments. The shared sea transport services are often carried out by container ships and ferries (RoRo and RoPax). In the shared transport services, single shipments from various shippers are commonly consolidated through standardized cargo carrier units such as containers, trailers etc in order to coordinate goods flows i.e. achieve economy of scale

Trafikverket Publikation 2012:205

Borlänge, 46 s, 2,71 MB, 2012

ISBN: 978-91-7467-401-9

Index terms: Ship, Fuel, Fuel consumption, Energy conservation, Method, Transport operator, Interview
Ämnesord: Fartyg, Bränsle, Bränsleförbrukning, Energihushållning, Metoder, Transportörer, Intervjuer

Sjöfartens långsiktiga drivmedelsförsörjning

Kågeson, Per

http://www.transportportal.se/swopec/CTS-2012-28.pdf

Syftet med denna studie är att översiktligt jämföra kostnads- och klimateffektiviteten hos vissa flytande och gasformiga fossila bränslen som kan bli aktuella för fartygsdrift samt produktion av motsvarande drivmedel från förnybar energi. En viktig aspekt är om det kan finnas ekonomiska och miljömässiga fördelar med att använda naturgas och/eller biogas för framställning av flytande drivmedel som är av sådan storleksordning att de kan uppväga nackdelen av den lägre totala energieffektivitet som blir en konsekvens av att omvandla gas till vätska. Exempel på sådana fördelar kan vara lägre kostnader i distributions- och användarleden samt möjlighet att minimera läckage av metan, som är en kraftfull växthusgas. Ännu finns relativt få LNG-drivna fartyg och inga som drivs med FT-diesel, metanol eller DME. Det innebär att kostnadsjämförelsen är svår och måste baseras på en rad mer eller mindre osäkra antaganden. Dock produceras betydande mängder LNG och fossilbaserad metanol vilket gör att en del av kostnaden kan bedömas med någorlunda säkerhet. Utfallet påverkas av fartygens återstående livslängd, utrymmet ombord för kompletterande utrustning samt av i vilken utsträckning de förväntas trafikera SECAoch NECA-områden med krav på mycket låga utsläpp av svavel respektive kväveoxider.

Centre for Transport Studies Stockholm Working papers in Transport Economics 2012:28

VTI

KTH Royal Institute of Technology**hulda**

S-WoPEc, Scandinavian Working Papers in Economics

Stockholm, 22 s, 323,11 kB, 2012

Index terms: Fuel, Cost, Greenhouse effect, Impact study (environment), Fuel oil, Diesel oil, Natural gas, Methanol, Biogas
Ämnesord: Bränsle, Kostnader, Växthuseffekten, Miljöpåverkan, Dieselolja, Naturgas, Metanol, Biogas

Förutsättningar för elanslutning av fartyg i Göteborgs hamn

Wilske, Åsa (red.); Lindved, Håkan (red.)

http://www.transportportal.se/ShipDocs/2014-01-13rec162235.pdf

Med elanslutna fartyg kan luftutsläppen i hamn minska radikat. Det är möjligt genom att el från land ersätter de dieseldrivna fartygsmotorerna som normalt genererar el under hamnuppehållet. Syftet med projektet är att utvärdera teknik för elanslutning av fartyg och på bred front öka kunskapen och intresset för tekniken. Syftet ska uppnås bl.a. genom att utbyta erfarenhet och kunskap mellan de hamnar som har elanslutning och sprida denna information till hamnar och rederier intresserade av tekniken. Projektmålet är att redovisa en flexibel konceptlösning på hur landanslutning kan ske mellan en hamn och ett fartyg som har olika frekvens i de elektriska näten, att genomföra och redovisa en kostnadsnyttoanalys för en utbyggnad av elanslutning i Göteborgs hamn och att upprätta en internationell plattform för erfarenhetsutbyte mellan hamnar. Projektet förväntas resultera i ökad kunskap och intresse för elanslutning som teknik för att kraftfullt minska såväl lokala luftutsläpp som utsläpp av växthusgaser. Projektet är uppdelat i tre delar; erfarenhetsutbyte, internationell standard och pilotstudie. Inom projektet ska erfarenhet utbytas och kunskap byggas mellan hamnar. Viktiga aktiviteter är att ta fram en lättillgänglig publikation som redovisar möjligheter och hinder (kostnad-nytto-analys), samla relevant information i en webbaserad databas och arrangera en internationell konferens. När det gäller internationell standard ska vi inom projektet medverka till att en sådan tas fram samt implementera denna standard i en design av en anläggning. Pilotstudien innebär att projektet omfattar att utvärdera elanslutning från tekniska/ekonomiska aspekter, miljö och sociala aspekter. Vidare ska möjligheterna till att integrera ny teknik som t. ex. ökad flexibilitet för anslutning att föreslås.

Göteborgs hamn

ABB

VINNOVA

Ramböll

Göteborg, 111 s, 6,77 MB, 2012

Index terms: Electricity, Ship, Port, Energy
Ämnesord: Elektricitet, Fartyg, Hamnar, Energi

ULYSSES: the ultra slow ship of the future

Claudepierre, Martial; Klanac, Alan; Allenström, Björn

http://www.transportportal.se/ShipDocs/2014-01-21rec162250.pdf

The EU-project ULYSSES: Ultra Slow Ships is currently in progress. ULYSSES' main objective is to develop ship design concepts, which should be able to meet the 2020 and 2050 emissions' targets. The fact that slow steaming saves fuel is well known and commonly used. History shows that reducing service speed of ships has been a common strategy when charter rates were low and/or the fuel oil prices were high. Slow steaming can be economically sound strategy, but also can be a potential problem, especially when sailing in crowded area with large traffic, dangerous areas infested by pirates or in adverse weather conditions. The main aspect is to determine whether the available propulsion power will be sufficient to enable a safe sailing of the ship. Since slow steaming also is ideal to be combined with different kind of wind propulsors such as kites, Flettner rotors or sails, the needed power installed on board can be very low to just ensure calm water operations. In the present paper these issues are illuminated.

9th annual Green Ship Technology Conference, 27-29 March 2012, Copenhagen

Köpenhamn, 9 s, 364 kB, 2012

Index terms: Energy conservation, Fuel consumption, Ship
Ämnesord: Energihushållning, Bränsleförbrukning, Fartyg

Improving ship energy efficiency through a systems perspective

Baldi, Francesco

http://publications.lib.chalmers.se/records/fulltext/186189/186189.pdf

The last years have been particularly challenging for the shipping industry. Fuel prices have increased to levels only seen during the oil crisis in the 70's, and environmental regulations have grown much stricter than in the past. Climate change, at a global level, is going to become a major threat to society. Increasing energy efficiency is one of the only possibilities of reducing fuel costs and environmental impact of the shipping sector without influencing the output. However, despite the recent developments in several aspects of ship technology, little effort has been made in looking at the whole ship as an energy system. This licentiate thesis aims at filling a gap in the existing scientific knowledge on the way energy in its different forms is generated, converted, and used on board of a vessel. This is done by applying energy and exergy analysis to ship energy system analysis. The results of this analysis allow improving the understanding of energy flows on board and identifying the main inefficiencies and waste flows. As a further development of this work, these results are used as a basis for the generation and evaluation of alternatives for improving ship energy efficiency. This is applied to the three main categories of: ship operations, retrofitting, and design. Engine-propeller interaction, waste heat recovery systems and the early stages of ship design are identified as relevant aspects and their evaluation indicates that there is a relevant potential of improvement.

Chalmers University of Technology. Department of Shipping and Marine Technology Technical report 147 1652-9189

Göteborg, 78 s, 2,58 MB, 2013

Övrig info: Endast kappan. Saknar de 3 artiklarna.

Index terms: Fuel consumption, Energy consumption, Ship, Efficiency, Emission, Carbon dioxide
Ämnesord: Bränsleförbrukning, Energiförbrukning, Fartyg, Effektivitet, Emissioner, Koldioxid

Energy efficiency in the maritime industry: pre-study for assessing the need for, and methods for organizing, a network for energy efficiency in the maritime industry

Hanning, Andreas

http://publications.lib.chalmers.se/records/fulltext/local_158897.pdf

This report outlines the possibilities for starting a network for energy efficiency in the maritime industry, as well as presents a proposal for how such a network could be organized. The report consists of the following four parts: First, the purpose for starting a network for energy efficiency in the maritime industry is discussed. The purpose outlines the need for a network for energy efficiency. Second, the proposed structure for a network for energy efficiency in the maritime industry is presented. The structure outlines organizational methods and processes needed in order for the network to function properly. The need for an aim and objectives for a network for energy efficiency in the maritime industry is also discussed. Third, the steps needed in order to create a network are presented. These include the formation of a core group of companies willing and able to commit funds to the creation of the network, as well as creating an executive board in charge of the network. Also, methods for funding the network are discussed. Finally, the conclusion puts the proposed structure in context with the purpose for starting a network for energy efficiency.

Chalmers University of Technology. Department of Shipping and Marine Technology R 12:134 1652-9189

Göteborg, 23 s, 374,76 kB, 2012

Index terms: Energy conservation, Energy consumption, Fuel consumption, Maritime transport
Ämnesord: Energihushållning, Energiförbrukning, Bränsleförbrukning, Sjöfart

Sustainable shipping in the European Union

Svensson, Erik

https://www.chalmers.se/gmv/EN/projects/epsd/downloadFile/attachedFile_f0/Sustainable_Shipping_in_the_European_Union?nocache=1361441035.61

This report provides background material for an upcoming review on sustainable shipping in the EU. The report is a request from the European Panel for Sustainable Development (EPSD) which acts as an independent academic body for critical reviews on European Union (EU) policies related to sustainable development. The purpose has been to outline recent and present EU efforts and to identify gaps in policies, laws and knowledge to investigate further. Relevant areas for study were first identified within a definition of sustainable shipping that included all three pillars of sustainable development. Strategic EU policy documents were then reviewed in detail, and specific policies and regulations under each area were identified.

Chalmers tekniska högskola

Göteborgs universitet

Göteborgs miljövetenskapliga centrum, GMV.

European Panel on Sustainable Development, EPSD Report no 5

Göteborg, 50 s, 1,30 MB, 2012

ISBN: 978-91-979374-2-9

Index terms: Sustainable transport, Environment protection, Pollution, International, Legislation, EU directive, Policy, EU
Ämnesord: Hållbara transporter, Miljöskydd, Miljöföroreningar, Internationell, Lagstiftning, EU-direktiv, Policy, EU

Targeting the environmental sustainability of European shipping: the need for innovation in policy and technology

Cullinane, Kevin; Barregård, Lars; Fridell, Erik; Winnes, Hulda; Johnson, Hannes; Domini, Peter; Hassellöv, Ida-Maja; Basu Bal, Abhinayan

http://publications.lib.chalmers.se/records/fulltext/202349/local_202349.pdf

This report has emerged from a background survey with the aim of mapping what is being done on sustainable shipping within the European Union. A wide scope of strategic EU policy sectors and documents, including existing directives, legislation and regulations on shipping were scrutinized to describe the actual knowledge framework. The background study defines areas where new research could contribute in closing knowledge gaps, and gives a compilation of directives and policy documents concerning sustainable shipping in a European perspective. Based on a definition of sustainable shipping that include all three pillars of sustainable development, the present report presents a holistic view and strategies for achieving a sustainable shipping industry. The report provides scientifically based knowledge of various aspects that affect sustainability at sea, such as particles, greenhouse gases, ship wrecks, ship recycling, and intermodality, as well as a comprehensive overview and updates on regulations. These various areas are presented as separate chapters and solid recommendations are presented on future actions (on EU and international level) to make the shipping industry in Europe a sustainable business.

Göteborgs miljövetenskapliga centrum, GMV

EPSD - European Panel on Sustainable Development

Göteborg, 74 s, 1,61 MB, 2014

Index terms: Maritime transport, Emission, Air pollution, Particulate matter, Greenhouse gas, Environment protection, International, Legislation, EU directive
Ämnesord: Sjöfart, Emissioner, Luftföroreningar, Partiklar (luftburna), Växthusgaser, Miljöskydd, Internationell, Lagstiftning, EU-direktiv
Extra ämnesord: Kustsjöfart

Development of the Short Sea Shuttle Concept

Styhre, Linda; Roso, Violeta; Bergqvist, Richard; Woxenius, Johan; Lumsden, Kent

http://www.ivl.se/download/18.21d4e98614280ba6d9e5cc2/1394706767688/B2157.pdf

The purpose of this study is to develop and define a container shipping concept – The Short Sea Shuttle Concept. The concept involves transport of containers between a number of ports and a hub port with functional inland connections, fixed schedules, and high reliability and departure frequency. Punctuality and high frequency are essential factors for the shuttles, as it allows a transfer of more time-sensitive cargo to sea, which currently is transported by other modes. The increased importance of shipping in a future transport system means that there are great demands on efficiency, sustainability and economic stability. The focus in this report is on the development of the concept for transport of cargo within, to and from Sweden. The Short Sea Shuttle Concept is defined as: High-frequency short sea liner shipping of standardised load units that is highly integrated into transport chains with functional inland connections. The main advantages of the Short Sea Shuttles Concept are lower costs for shippers, potential lower emissions and available infrastructure and vessel capacity. An implementation of a system of short sea shipping links will also bring preparedness for further capacity problems in railway and road infrastructures and will also open up new markets. Even though the potential is substantial, implementation of the concept is a challenge in other aspects, such as start-up risks and risk for low profitability due to low regional goods volumes. Initial market analysis has identified three main potential international routes for the Short Sea Shuttles in the region: 1) Norway-Sweden-Denmark, 2) Sweden-Finland-Russia, and 3) Sweden-the Baltic States.

IVL. Swedish Environmental Institute IVL rapport B 2157 0283-877X

Chalmers University of Technology

University of Gothenborg

Göteborg, 61 s, 2014

Index terms: Inland waterway transport
Ämnesord: Inlandssjöfart

Energieffektiv svensk sjöfart

Styhre, Linda; Winnes, Hulda; Brännstrand, Maria; Karlsson, Roger; Lützhöft, Margareta; Falk, Martin; Åström, Daniel

http://www.ivl.se/download/18.21d4e98614280ba6d9e5827/1393593506094/B2155.pdf

Sjöfarten står inför en enorm utmaning med krav på 40-50 procent minskning av koldioxidutsläpp till 2050 jämfört med 2005 års utsläpp, samtidigt som det finns en politisk vilja att öka andelen sjötransporter. Kraftigt ökad energieffektivisering kommer att vara avgörande för att möta utsläppskraven. Dock visar projektioner att det globalt kommer att vara svårt att minska sjöfartens utsläpp via åtgärder som är kända idag. Den här studien pekar på vikten av en snabbare implmentering av kända åtgärder och fortsatt utveckling av nya energireducerande tekniker, verktyg och metoder. Ökad energieffektivitet inom sjöfarten kan ske genom oeprativa. logistiska, tekniska, avtals- och markndsrelaterade och kommunikativa åtgärder. Åtgärder kopplade till varandra och bör med fördel betraktas ut ett systemperspektiv.

IVL. Svenska Miljö Institutet IVL rapport B 2155 0283-877X

Göteborg, 78 s, 2014

Index terms: Emission control, Energy consumption, Efficiency, Energy conservation, Carbon dioxide
Ämnesord: Emissionskontroll, Energiförbrukning, Effektivitet, Energihushållning, Koldioxid

Energy and exergy analysis of ship energy systems: the case study of a chemical tanker

Baldi, Francesco; Johnson, Hannes; Gabrielii, Cecilia; Andersson, Karin

http://publications.lib.chalmers.se/records/fulltext/199290/local_199290.pdf

Shipping is already a relevant contributor to global carbon dioxide emissions, and its share is expected to grow together with global trade in the coming years. At the same time, bunker prices are increasing and companies start to feel the pressure of growing fuel bills in their balance sheet. In order to address both challenges, it is important to improve the understanding of how ship energy consumption is generated, through a detailed analysis of its energy systems. In this paper, a method for the analysis of ship energy systems is proposed and applied on one year of operations of a chemical tanker, for which both measurements and mechanistic knowledge of ship systems were available. Energy analysis applied to the case-study vessel allowed comparing different energy flows and therefore identifying system components and interactions critical for ship energy consumption. Exergy analysis allowed instead identifying main inefficiencies and evaluating waste flows. This last information was then processed in order to estimate the potential for waste energy recovery under different conditions. Results showed that propulsion is the main contributor to ship energy consumption (70%), but that also auxiliary heat (16.5%) and power (13.5%) needs are relevant sources of energy consumption. The potential for waste heat recovery is relevant, especially in the exhaust gas, which contains an exergy flow sized 18% of engine power output.

Chalmers tekniska högskola

Göteborg, 13 s, 930 kB, 2014

Index terms: Energy, Fuel consumption, Energy consumption, Efficiency, Ship
Ämnesord: Energi, Bränsleförbrukning, Energiförbrukning, Effektivitet, Fartyg

Towards understanding energy efficiency in shipping

Johnson, Hannes

http://publications.lib.chalmers.se/publication/173631-towards-understanding-energy-efficiency-in-shipping

There is a great interest in increasing energy efficiency in shipping amongst many stake-holders. Shipping companies are looking for ways to reduce costs, and policy-makers internationally, regionally and nationally—are looking for ways to cut greenhouse gas (GHG) emissions. At first glance, this looks like a win-win situation. Assessments show a large cost-efficient, potential for improvement. However, these also show that even if all cost-effective measures were to be implemented, GHG emissions from shipping will still increase. The continued exponential growth of economies depends on international trade, which in turn will need to be facilitated by an exponentially growing shipping sector. Moreover, it is puzzling that such a potential could exist at all. What is keeping the shipping industry from harnessing the potential? The same situation has been shown to exist in many sectors and is usually referred to as an energy efficiency gap. It has been attributed to failures and barriers in markets, institutions and organizations. This PhD project is an attempt to understand this gap between reality and what should be cost-effective, through studies of energy management practices in shipping companies. In Paper I, the shipping sector is placed in the context of previous research, based on semi-structured interviews with different stakeholders mainly in the Swedish shipping sector. The main strategy of this research project was to create a collaborative project together with shipping companies on implementing an energy management systems in their respective organizations. What is it that shipping companies have to be good at in order to improve? A participatory role from academia—an action research approach—was chosen. This was both to gain project acceptance in the companies, and because other researchers have highlighted it when trying to understand change processes. The aim was to publish selected problems as case studies. The first case study, paper II, discusses aspects such as project management abilities, measurements, division of responsibilities, competence and communication in the context of effective energy management. Policy instruments have already been created as an attempt to increase energy efficiency in shipping. One of these, the Ship Energy Efficiency Management Plan (SEEMP) is aiming at encouraging better practices on board ships. Based on similar instruments and previous research, Paper III discusses gaps in the SEEMP guideline. This licentiate thesis itself is an attempt to put the results and arguments of the pa-pers in a wider context. It can also be seen as a quest for increasing the author's own understanding of the problem. The role of increased transparency on energy performance is highlighted for improving firm performance, but also for enabling commercial gain in markets for more energy efficient ships and operational practices are highlighted. The role of an energy management organization in a shipping company is also discussed. Finally, the thesis can also be seen as an attempt to entice other researchers to perform further studies in this vast, and for future generations crucial, problem field.

Chalmers tekniska högskola. Institutionen för sjöfart och marin teknik R 142 1652-9189

Göteborg, 88 s, 1,57 MB, 2013

Index terms: Fuel consumption, Energy consumption, Energy conservation, Efficiency, Ship
Ämnesord: Bränsleförbrukning, Energiförbrukning, Energihushållning, Effektivitet, Fartyg

EFFEKTIVISERING AV TRANSPORTMEDELSINTEGRATION OCH DESS INFRASTRUKTUR

Godstrafik på järnväg: åtgärder för ökad kapacitet på lång sikt: underlagsrapport till statens offentliga utredning om fossilfri fordonstrafik

Fröidh, Oskar

http://kth.diva-portal.org/smash/get/diva2:638703/FULLTEXT01.pdf

De viktigaste slutsatserna av analysen: - Persontrafiken på järnväg bedöms öka så mycket till 2030 och 2050 att godstrafiken i framtiden får färre tåglägen, särskilt dagtid. - De största investeringarna ligger i att med infrastrukturåtgärder minska dagens och framtida tillkommande kapacitetsproblem. - Standardfaktorer, som högre axellaster och större bärighet (meterlast), större lastprofil och längre och tyngre godståg är väsentliga för att öka effektiviteten och minska energiförbrukning och transportkostnaderna. - För att klara ytterligare godstrafik utöver basprognosen (+50 % respektive +100 %) krävs tillkommande investeringar som bedöms till 46-54 miljarder kr under perioden 2015-2050. - De tillkommande investeringarna (för +50 % respektive +100 % ökad godstrafik) omfattar främst förlängda mötes- och förbigångsspår och bangårdar för 1000 m respektive 2x1000 m tåglängd samt vissa dubbelspårsetapper. - Bedömningarna visar att de extra långa godstågen (2x1000 m) ger mest kapacitet per investerad krona och att det vid fullständig utbyggnad skulle finnas kapacitet för mer än 100 % ökning av transportkapaciteten. - Dagens svenska standard med upp till 750 m tåglängd är sannolikt kortare än optimal godstågslängd och skulle behöva omprövas till förmån för längre godståg.

Kungliga tekniska högskolan. Institutionen för transportvetenskap TRITA-TSC-RR 13:003

Stockholm, 98 s, 7,37 MB, 2013

ISBN: 978-91-87353-17-8

Index terms: Freight transport, Rail bound transport, Increase, Railway network, Long term, Forecast, Calculation
Ämnesord: Godstransporter, Järnvägstransporter, Ökning, Järnvägsnät, Långsiktig, Prognoser, Beräkning
Extra ämnesord: Kapacitet (järnvägsnät)

Energimätning på tåg för rundvirkestransporter på sträckan Mora–Borlänge–Gävle

Ahlberg, Joakim

http://urn.kb.se/resolve?urn=urn:nbn:se:vti:diva-6977

I det tredje delprojektet av ELVIS-demonstrationsprojektet för längre och tyngre godståg är syftet att mäta energianvändningen som ett tyngre tågset ger upphov till. Med tyngre avses här en ökad totalvikt genom fler vagnar, både fullastade och olastade, än vad som normalt körs på sträckan. Antagandet är att det med tyngre tåg finns möjlighet att göra (gods)transporter mer energieffektiva. Målsättningen är att framför allt testa hypotesen: · Att energianvändningen per tonkilometer kan reduceras genom att använda tyngre tåg. Rapporten belyser svårigheterna med att använda befintlig data för utvärdering av vad som driver energianvändningen på tåg. Datat i har inte varit kvalitetssäkrad för ändamålen i denna studie, vilket har orsakat en hel del fel och tillförlitligheten på vissa resultat är lägre än de skulle behöva vara. En slutsats från projektet att det skulle behövas en genomgång av databaserna hos Trafikverket om energianvändning ska studeras närmare, i alla fall om Trafikverkets utrustning för energimätning ska användas. Alternativt bör extern utrustning monteras på loken för att på så vis generera mer ändamålsenlig data, det senare var dock omöjligt då lokägaren inte godkände det. En annan slutsats är att körstilen spelar roll, det skiljer upp till 20 procent använd nettoenergi mellan förarna. Givet alla felkällor har ändå en regressionsanalys gjorts för att analysera hur energianvändningen för ett godståg kan bero på bruttovikten på tåget samt antal stopp tåget gör. Resultaten indikerar att det är skillnader på energianvändning för olika bruttovikter på tåget, men då det är oklart hur resultaten ska tolkas så krävs det mera mätningar för att kunna säga något bestämt. Detsamma gäller för hur antalet stopp påverkar användningen av energi, i en mätning fick vi ingen påverkan på energianvändningen av antal stopp medan vi fick det i en annan.

VTI rapport 829 0347-6030

Linköping, 30 s, 2,15 MB, 2014

Index terms: Energy consumption, Measurement, Efficiency, Ton kilometer, Freight train, Weight, Timber
Ämnesord: Energiförbrukning, Mätning, Effektivitet, Tonkilometer, Godståg, Vikt, Timmer

Energy demand impacts of long heavy duty vehicles: analysis of possible ways to introduce the effects of long vehicles into the GAINS model

Yaramenka, Katarina; Åström, Stefan; Jerksjö, Martin; Bäckström, Sebastian

http://www.ivl.se/download/18.3b172370144f561e6f819c1/1396424366007/B2163.pdf

The objective of this study was to explore possible approaches to explicitly include the use of long heavy duty vehicles (vehicles with a total weight over 40 ton and a total length over 18.75 meter) as an energy efficiency measure in the GAINS model, to assess their efficiency in terms of transport work (ton-kilometres) and traffic work (vehicle-kilometres), and to provide a basis for the analysis of the emission mitigation potential with respect to this vehicle category, currently not distinguished in the model. Potential substitution of long heavy duty vehicles with conventional European vehicles for goods transportation in Sweden was modelled and analysed. Calculation results indicated that one conventional European vehicle would consume 22 per cent less fuel per traffic work but 30 per cent more fuel per transport work than one long heavy duty vehicle. As a net effect, the total fuel consumption of heavy duty trucks would increase by 24 percent if long heavy duty vehicles were withdrawn. For the Swedish conditions represented in this analysis, the use of long heavy duty vehicles appears to be more fuel efficient than to use conventional EU vehicles. The main conclusions of this study is that it is possible to develop an integrated assessment model method for presenting long heavy duty vehicles as a fuel efficiency option in the transport sector, but that the benefit of the option is dependent on assumptions in the input data. Improved system understanding, statistical data, and scenarios would be needed for representation of long heavy duty vehicles as a general fuel efficiency option in future analyses.

IVL. Svenska Miljöinstitutet IVL rapport: B 2163 0283-877X

Göteborg, 57 s, 2014

Projektnamn: SCARP. Swedish Clean Air Research Programme

Index terms: Heavy vehicle, Fuel consumption, Emission, Model (not math), Length, Weight, Calculation
Ämnesord: Tunga fordon, Bränsleförbrukning, Emissioner, Modeller, Längd, Vikt, Beräkning

Transportkvalitet i intermodala transportkedjor

Bärthel, Fredrik

http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=69

Denna rapport utgör en sammanläggning av tre studier, vilka redovisas som delapporter. I den första studien diskuteras faktorer som inverkar på valet av transportlösningar. Denna baseras på en litteraturgenomgång avseende transportköpares krav och preferenser. I delrapport två diskuteras kritiska faktorer i beslutsprocessen för val av transportlösning baserat på en faktor-analys för olika kundkategorier. I den tredje delapporten diskuteras möjligheter med att öka de intermodala transporterna inom handels- och livsmedelssegmentet, d.v.s. inom det kvalitetskänsliga segmentet. Syftet med de studier som redovisas i denna rapport är: (1) Baserat på en litteraturgenomgång kartlägga de faktorer (kategorier) som transport-köpare använder vid val av transportlösning. (2) Utforma resultatet från delmoment 1 och utforma ett frågeformulär kring beslutsprocessen för val av transportlösning för att utreda hur olika parametrar och variabler påverkar val av transportlösning. (3) Kategorisera kunder i kundgrupper beroende på om kunderna prioriterar kvalitets-, kostnads- eller prioriterar andra faktorer vid val av transportlösning (4) Att diskutera kvalitetsaspekterna för kvalitetskänsligt gods och dess inverkan på potentialen för intermodala transporter.

TFK – TransportForsK TFK rapport 2012:4 0347-0970

Stockholm, 98 s, 2,22 MB, 2012

ISBN: 978-91-85665-56-3, 91-85665-56-8

Projektnamn: SiR-C, Swedish Intermodal Transport Research Centre

Index terms: Intermodal transport (freight), Freight transport, Transport network
Ämnesord: Intermodala transporter, Godstransporter, Transportnätverk
Extra ämnesord: Transportmedelsval

Slutrapport Duo2-Trailer

Cider, Lennart; Ranäng, Sara

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001901_002000/Publikation_001910/2010-02849_publikrapport_SV.pdf

Godstransporter på väg står för en ökande andel av utsläppen av växthusgasen CO2. Sverige har förbundit sig att minska utsläppen av CO2. Målsättningen med projektet är att minska utsläppen av koldioxid i relativa tal genom att minska antalet fordon och att öka godsvolymen per fordon. I projektet har, med föreskrift och dispens från myndigheter, en fordonskombination med dragbil som drar två semitrailrar istället för endast en semitrailer tagits fram och körts under snart 18 månader. Målet om minskat utsläpp har uppnåtts. Projektet har visat på en minskning på 27% i både CO2och bränsle per transporterad godsmängd. Detta sker utan någon negativ påverkan på trafiksäkerhet, fordons eller infrastruktur. Vidare fungerar logistiken utmärkt då fordonskonceptet bygger på existerande transportenheter, s.k. moduler. Projektet kommer att fortsätta med ytterligare en etapp där den existerande kombinationen uppdateras samt en helt ny typ av fordonskombination. Visionen är att fordonskombinationer av typ Duo2 och andra hög kapacitets transporter (HCT) ska tillåtas i allmän trafik och på så sätt nå målet om kraftigt minskade utsläpp av växthusgaser från vägtransporter. NVF rapporten 1/2013 sammanfattar att i stället för småskaliga försök med godkännande av varje enskild fordonskombination så bör framgångsreceptet snarast skalas upp i omfattning, eftersom ett större antal högkapacitetsfordon kan göra stor nytta för samhället.; De viktigaste slutsatserna är att Duotrailer:; - kan ge kraftigt minskade utsläpp av CO2 i relativa tal; - fungerar i praktiken då det bygger vidare på dagens moduler; - har inte visat på några negativa effekter på trafiksäkerhet; - tar upp mindre vägyta, mindre trängsel, för samma mängd transporterad last

Fordonsstrategisk Forskning och Innovation (FFI)

Stockholm, 17 s, 720,67 kB, 2013

Index terms: Lorry, Semi trailer, Length, Weight, Dimension, Freight transport, Emission, Carbon dioxide, Field (test), Fuel consumption
Ämnesord: Lastbilar, Påhängsvagnar, Längd, Vikt, Dimension, Godstransporter, Emissioner, Koldioxid, Fältförsök, Bränsleförbrukning

ETT - Modulsystem för skogstransporter: en trave till (ETT) och större travar (ST)

Löfroth, Claes; Svenson, Gunnar

http://fudinfo.trafikverket.se/fudinfoexternwebb/Pages/PublikationVisa.aspx?PublikationId=1796

Projektet ETT-Modulsystem för skogstransporter har visat att tyngre och längre fordon väsentligen kan minska bränsleförbrukningen, utsläppen av CO2 och kostnaderna. Samtidigt har inte någon negativ inverkan på vare sig trafiksäkerhet eller vägslitage kunnat påvisas.

Skogforsk Arbetsrapport 758 1404-305X

Uppsala, 142 s, 7,66 MB, 2012

Index terms: Timber, Lorry, Dimension, Length, Weight, Freight transport, Fuel consumption, Emission, Cost, Field (test)
Ämnesord: Timmer, Lastbilar, Dimension, Längd, Vikt, Godstransporter, Bränsleförbrukning, Emissioner, Kostnader, Fältförsök

Why do CO2 emissions from heavy road freight transports increase in spite of higher fuel prices?

Vierth, Inge

http://www.transportportal.se/swopec/CTS2013-4.pdf

The paper analyses why CO2 emissions from heavy road freight transports increase in spite of higher fuel prices. Swedish time series data for the period 1990-2011 are analyzed with help of indicators. The logistic efficiency of the road transports improved especially in the 1990-ties due to the allowance of heavier trucks. Also the energy efficiency increased during that period. Since then there have been improvements but no major efficiency gains have been realized. Today potentially cost effective technologies exist to further reduce the CO2 emissions from heavy road freight transport. However, technical, institutional and financial barriers reduce the incentives for the transport firms to imply these. Split incentives caused by contract structures or ownership patterns can impede the employment of these technologies, as the firms that invest in the technologies have little incentive to do so. If fuel savings are realized rebound effects can appear that cancel out improved energy efficiency. The internalisation of the social marginal costs can lead to modal shifts to less carbon intensive modes, but shippers minimize their total costs and take into account quality aspects when choosing transport solutions. There are obstacles for the increase of the share of non-fossil energies in form of access to raw material, infrastructure for vehicles that can use the alternative fuels etc. On the national and international road freight transport markets staff costs are often more important than taxes and fees. Deeper knowledge of the impacts of different policy measures is required in order to understand why the CO2 emissions increase despite increased fuel prices. A better understanding of the implications of the lack of thresholds and other model simplifications in the Swedish Samgods model is also needed and an analysis of what is required to better mirror the contracts that we observe in reality. It is also necessary to study the role of the lighter trucks in the transport chains.

Centre for Transport Studies Stockholm Working papers in Transport Economics 2013:4

VTI

KTH Royal Institute of Technology

S-WoPEc, Scandinavian Working Papers in Economics

Stockholm, 25 s, 387,07 kB, 2013

Index terms: Carbon dioxide, Emission, Lorry, Fuel consumption, Elasticity, Diesel oil, Price, Tax
Ämnesord: Koldioxid, Emissioner, Lastbilar, Bränsleförbrukning, Elasticitet, Dieselolja, Priser, Skatter

Mot koldioxidsnåla godstransporter: tillväxtdynamiskt perspektiv på logistik och godstransporter fram till 2050

Pålsson, Henrik; Eng Larsson, Fredrik; Abbasi, Maisam; Olander, Lars-Olof; Wandel, Sten; Smidfelt Rosqvist, Lena; Lundquist, Karl-Johan; Hiselius, Lena; Stelling, Petra

https://online4.ineko.se/trafikverket

I denna rapport konstaterar forskare från det tvärvetenskapliga forskningsprogrammet LETS att ett aktivt arbete med styrmedel är nödvändigt inom vissa områden för att nå de klimatrelaterade målen. Inom andra områden är tilltron till marknadens möjligheter att lösa problemen utan yttre påverkan större. Föreliggande rapport kan nyttjas som underlag för politiker och beslutsfattare för att hantera de utmaningar som gäller godstransporternas miljöpåverkan. Rapporten ger en delvis ny referensram för att diskutera och reducera transportutsläpp. Denna referensram bidrar till att belysa behov av strukturella förändringar samt lyfter att handlingsutrymmet för olika åtgärder varierar över tid.

Trafikverket Publikation 2013:120

Borlänge, 76 s, 1,59 MB, 2013

ISBN: 978-91-7467-511-5

Index terms: Carbon dioxide, Emission, Freight transport, Emission control, Sustainability, Long term, Development
Ämnesord: Koldioxid, Emissioner, Godstransporter, Emissionskontroll, Hållbar utveckling, Långsiktig, Utveckling

Godsets hela resa: analys av utvalda stråk inom Trafikverket Region Syd på väg och järnväg

Johannesson, Staffan; Göthe, Lotta

https://online4.ineko.se/trafikverket

Trafikverket Region Syd har tagit fram ett planeringsunderlag för Gods med utgångspunkt från att Trafikverket har ett uppdrag att skapa förutsättningar för effektiva och långsiktigt hållbara godstransporter och bidra till att logistikområden utvecklas.; Med planeringsunderlaget som utgångspunkt har vi genomfört en studie där vi intervjuat ett antal företag som trafikerar godsstråk som har sin start- och/eller slutpunkt i Region Syd. Dialogen har skett utifrån perspektivet ”Godsets hela resa” för att fånga och analysera kundernas behov.; Syftet har varit att identifiera åtgärder som Trafikverket Region Syd inom ramen för sitt uppdrag kan genomföra för att effektivisera och underlätta för godstransporterna i dessa utpekade godsstråk. Fokus är på åtgärder som kan påverka behovet av transporter, valet av transportsätt samt ett mer effektivt utnyttjande av befintlig infrastruktur.

Trafikverket Publikation 2013:001

Borlänge, 58 s, 1,25 MB, 2012

ISBN: 978-91-7467-444-6

Index terms: Freight transport, Efficiency, Increase, Improvement, Corridor (transp), Transport operator, Interview
Ämnesord: Godstransporter, Effektivitet, Ökning, Förbättring, Transportkorridorer, Transportörer, Intervjuer

Grønn Godstransport: resultatet fra forskningsprosjektet

Norvik, Roar; Levin, Tomas; Sund, Astrid Bjørgen; Gabriel, Hanne Marie; Nicolaisen, Tor; Toftengaard, Heine Andreas

http://www.sintef.no/upload/Teknologi_samfunn/6060/Rapporter%202011/A18830_Gr%c3%b8nn%20godstransport_Resultatet%20fra%20forskningsprosjektet%20Gr%c3%b8nn%20godstransport.pdf

SINTEF Teknologi og samfunn. Transportforskning SINTEF A118830

Trondheim, 90 s + bil (132 s), 5,00 MB, 2011

ISBN: 978-82-14-05087-5

Index terms: Freight transport, Impact study (environment), Calculation, Method, Emission, Greenhouse gas, Energy consumption, Fuel consumption
Ämnesord: Godstransporter, Miljöpåverkan, Beräkning, Metoder, Emissioner, Växthusgaser, Energiförbrukning, Bränsleförbrukning

Developing sustainable logistics services

Isaksson, Karin; Björklund, Maria

Purpose of this paper: Logistics companies need to take account of environmental aspects into their services to strengthen their position on the market and meet the increased demands from the society. Therefore, the purpose of this paper is to present a framework for how to consider sustainability in the development of logistics services. The paper also aims at developing a research agenda for further research needs regarding how logistics companies can include the environmental aspect in their service offerings.; Design/methodology/approach: This paper is based on a literature review that has its origin in sustainable service and product development. This is compared with literature about development of offerings for logistics companies. The results from the literature studies are then analyzed in order to identify a research agenda and to present a framework containing aspects of sustainable service offerings of relevance from a logistics company perspective.; Findings: The paper suggests how logistics service offerings can be enhanced through sustainable service and product development literature. A framework consisting of aspects to address in the development of sustainable offering for logistics firms is presented.; Research limitations/implications: The findings should be considered as conceptual, and provides a basis for further empirical based research; Practical implications: The results provide a basis for logistics companies, to build upon in their continuing efforts to develop and enhance more sustainable services to their customers.; What is original/value of paper: A large amount of literature can be found concerning sustainable development of offerings. However, literature concerning the development of sustainable services is not that available and there is a large lack regarding the connection to logistics companies., s 985-1000, 2010

ISBN: 978-87-92471-05-5

Övrig info: Ingår i: Proceedings of the 22nd Annual NOFOMA Conference :

Logistics and Supply Chain Management in a Globalised

Economy, June 10-11, 2010, Kolding, Denmark. Pp 985-1000

Index terms: Logistics, Transport operator, Sustainability, Environment protection, Development
Ämnesord: Logistik, Transportörer, Hållbar utveckling, Miljöskydd, Utveckling

Environmental work in a logistics company: a resource perspective

Maack, Christina; Sandberg, Erik; Huge-Brodin, Maria, s 1001-1016, 2010

ISBN: 978-87-92471-05-5

Övrig info: Ingår i: Proceedings of the 22nd Annual NOFOMA Conference :

Logistics and Supply Chain Management in a Globalised

Economy, June 10-11, 2010, Kolding, Denmark. Pp 1001-1016

Index terms: Logistics, Transport operator, Sustainability, Environment protection
Ämnesord: Logistik, Transportörer, Hållbar utveckling, Miljöskydd

Logistics companies' potential in greening their offered services

Maack, Christina; Huge-Brodin, Maria, 2010

Övrig info: Presented at the 17th international annual EurOMA

conference, Catholic University of Portugal (CUP), Porto,

Portugal, 6-9 June 2010

Index terms: Logistics, Transport operator, Sustainability, Environment protection
Ämnesord: Logistik, Transportörer, Hållbar utveckling, Miljöskydd

The influence of collaboration on greening logistics service

Björklund, Maria

Stockholm, 2011

ISBN: 978-91-976444-5-7

Övrig info: Ingår i: Plans forsknings- och tillämpningskonferens 2011:

Logistik i praktisk tillämpning. Sid 7-20

Index terms: Logistics, Sustainability, Environment protection
Ämnesord: Logistik, Hållbar utveckling, Miljöskydd

Greening logistics companies by utilizing employees' capabilities

Maack, Christina; Huge-Brodin, Maria; Abrahamsson, Mats, 2010

ISBN: 978-1-904564-34-8

Övrig info: Ingår i: Proceedings of the 15th annual Logistics Research

Network conference, Harrogate, United Kingdom, 8th-10th

September 2010. Pp 427-435

Index terms: Logistics, Transport operator, Sustainability, Environment protection, Personnel
Ämnesord: Logistik, Transportörer, Hållbar utveckling, Miljöskydd, Personal

Eco-centric design: a new paradigm for supply chains?

Halldorsson, Arni; Potter, Andrew; Björklund, Maria, 2010

ISBN: 978-1-904564-34-8

Övrig info: Ingår i: Proceedings of the 15th annual Logistics Research

Network conference, Harrogate, United Kingdom, 8th-10th

September 2010. Pp 245-253

Index terms: Logistics, Sustainability, Environment protection
Ämnesord: Logistik, Hållbar utveckling, Miljöskydd

Driving forces and barriers when pricing the environmental service offering - a cross case study of logistics companies

Isaksson, Karin; Huge-Brodin, Maria, 2010

ISBN: 978-1-904564-34-8

Övrig info: Ingår i: Proceedings of the 15th annual Logistics Research

Network conference, Harrogate, United Kingdom, 8th-10th

September 2010. Pp 303-311

Index terms: Logistics, Transport operator, Sustainability, Environment protection, Cost, Case study
Ämnesord: Logistik, Transportörer, Hållbar utveckling, Miljöskydd, Kostnader, Fallstudier

Logistics service providers going green: insights from the Swedish market

Isaksson, Karin

http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-73991

During recent years pressures on the logistics and transport industry to involve and engage more in environmental work have increased. Governmental awareness of environmental impact has led to an increased pressure on the logistics and transport industry to reduce the emissions incurred by their operations. In addition, customers have become more interested and demanding regarding green initiatives in their purchasing of transport services. Although logistics service providers (LSPs) are becoming more aware of environmental problems, the development of green initiatives in the logistics and transport industry is described in the literature as being in its infancy phase. Considering the scarcity of studies on LSPs' green initiatives, a study that reveals potential factors influencing the adoption of green initiatives may be helpful to fill the knowledge gap and provide opportunities for further research in this field.; The purpose of this licentiate thesis is therefore to describe how different factors can affect the adoption of green initiatives among LSPs, and how the adoption of green initiatives can be reflected in the service offering. This includes identifying different kinds of triggers, drivers and barriers, as well as firm characteristics and describing how these factors can affect the adoption of green initiatives. Furthermore, ways in which the adoption of green initiatives can be reflected in the service offering are exemplified in order to answer the second part of the purpose.; The theoretical base in this licentiate thesis can be linked to general environmental logistics literature, sustainable service, and product development research. The research in this study is in its nature explorative and empirical data have been obtained from a cross case study of six companies, and a survey study investigating LSPs active on the Swedish market.; Based on the findings from the analysis, the LSPs studied have commenced to adopt green initiatives since they experience the pressure to adapt to future expectations and, understand the consequences. This will enable the LSPs to respond to the increasing and more global competition. Although increased competiveness seems to act as a trigger, the role of competitors as a driver affecting the adoption of green initiatives among LSPs are neither stressed in the case study nor singled out in the survey study as a significant driver. Increased, interest from customers and decisions from top management are both highlighted as triggers for LSPs to start adopting green initiatives, in the literature as well as among the LSPs studied.; The role of customers and top management also seem to be prominent drivers in the further green development. By adopting green initiatives, LSPs strive to win new customers and there is also a desire to improve customer relationships. Furthermore, the engagement and support from top management can be crucial for how successfully the adoption of green initiatives is integrated into the company and received by the employees. In addition, among the LSPs studied, their employees can be considered as an essential driver and a resource when adopting green initiatives.

Linköping University. Department of Management and Engineering. Linköping studies in science and technology. Thesis 1518 0280-7971

LiU-TEK-LIC 2012:03

Linköping, 133 s, 1,75 MB, 2012

ISBN: 978-91-7519-970-2

Index terms: Logistics, Freight transport, Sustainability, Development, Motivation, Market, Management, Profitability, Knowledge, Transport operator, Case study, Questionnaire

Ämnesord: Logistik, Godstransporter, Hållbar utveckling, Utveckling, Motivation, Marknad, Ledning och organisation, Lönsamhet, Kunskap, Transportörer, Fallstudier, Enkäter

DUOLOK: sammanfattningsrapport

Bark, Peter; Skoglund, Mattias

Studier har visat att de svenska godstågsoperatörernas samlade lokpark av 450 ellok och tunga diesellok kan minskas med 20 % om ett 90-tal duolok ersätter ett 90-tal tunga diesellok och lika många ellok. Ett duolok är ett lok som matas med elenergi där kontaktledning är tillgänglig och när sådan saknas erhålls elenergi från egna dieseldrivna generatorer. Möjligheterna att minska användningen av tunga diesellok i Sverige befanns vara betydligt större än förutspått. Dieselbränsleförbrukningen vid godstransporter på järnväg kan minskas med 40 % från en nivå 2006 på 20 700 m3 om hälften, det vill säga 90 av de svenska operatörernas tunga diesellok ersattes av duolok. Om 120 tunga diesellok ersattes med duolok kunde dieselförbrukningen minskas med 60 %, till 8 500 m3. Godstransporternas elförbrukning beräknades öka med endast 2,5 % om 90 lok ersattes respektive 3,5 % om 120 lok ersattes. Detta från en nivå på 1 TWh. Ett syfte var att studera förutsättningar för samt att utveckla ett koncept avseende ett enhetligt dragkraftsystem, eller lok, för godståg, som på elektrifierade banor kan matas med elenergi från kontaktledning, och som kan användas i växling samt i tjänst på bangårdar, spår och terminaler som ej är elektrifierade. Avsikten var att ta fram ett koncept, benämnt duolok, som minskar energiförbrukning och miljöbelastning vid godstransporter på järnväg genom att lokala godståg och växlingsrörelser på elektrifierade bangårdar, banor och spår kan framföras med eldrift istället för dieseldrift. En avsikt var att utveckla ett duolok för godstransporter som medför att såväl antalet loktyper som det totala antalet lok hos olika operatörer kan minskas väsentligt. För terminal- och växlingstjänst på spår utan kontaktledning har det hittills inte funnits några bra alternativ till diesellok vilka bullrar och ger upphov till avgasemissioner. En översiktlig genomgång visade att de tunga dieselloken till stor del användes för tågdragning samt växling under kontaktledning, vilket innebar ett trovärdighetsproblem ur miljösynpunkt.

TFK - TransportForsK.

TFK rapport 2010:4

Stockholm, 44 s, 2010

ISBN: 9789185665341

Index terms: Locomotive, Hybrid vehicle, Electricity, Diesel engine, Life cycle, Cost, Emission, Particulate matter, Energy consumption, Fuel consumption, Diesel oil, Calculation, Greenhouse gas
Ämnesord: Lok, Hybridfordon, Elektricitet, Dieselmotorer, Livscykel, Kostnader, Emissioner, Partiklar (luftburna), Energiförbrukning, Bränsleförbrukning, Dieselolja, Beräkning, Växthusgaser

Logistikanalyser på företagen Electrolux Laundry och ITT Water & Wastewater

Wallinder, Catrin (red.)

http://www.transportportal.se/PDFStore/VV/2010-08-30-2010_041_logostikanalyser_pa_foretagen_electrolux.pdf

I publikationen redovisas resultat av djuplodande logistikanalyser på företagen ITT Water & Wastewater beläget i Emmaboda och Electrolux Laundry med bas i Ljungby. Huvudfokus har varit att hitta besparingsmöjligheter, såväl ekonomiskt som miljömässigt, framförallt inom godstransportflödet som går från företagens svenska fabriker. Analysen har i båda uppdragen resulterat i framtagning av nya arbetssätt och förslag på åtgärdsplaner i respektive företag.

Trafikverket. Publikation 2010:041

Borlänge, 7,61 MB, 96 s, 2010

ISBN: 9789174670110

Index terms: Freight transport, Logistics, Management, Enterprise, Efficiency, Sustainability
Ämnesord: Godstransporter, Logistik, Ledning och organisation, Företag, Effektivitet, Hållbar utveckling

Modeling and Performance Assessment of Intermodal Transfers at Cargo Terminals

Chen, Cheng-Chieh; Schonfeld, Paul

http://dx.doi.org/10.3141/2162-07

This study develops an analytical model for coordinating vehicle schedules and cargo transfers at cargo terminals to improve system operational efficiency and minimize total system costs. The studied problem is formulated as a multihub, multimode, and multicommodities network problem with nonlinear time value functions for shipped cargo. This is done primarily by optimizing service frequencies and slack times for system coordination while also considering loading and unloading, storage, and cargo processing operations at the transfer terminals. In a series of case studies, the model has shown its ability to determine optimal service frequencies (or headways) and slack times based on given inputs. Numerical results are solved using sequential quadratic programming and a genetic algorithm.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2162, s 53-62, 2010

ISBN: 9780309142922

Optimization Model for Transportation of Container Cargoes Considering Short Sea Shipping and External Cost: South Korean Case

Chang, Young-Tae; Lee, Paul T-W; Kim, Hwa-Joong; Shin, Sung-Ho

http://dx.doi.org/10.3141/2166-12

To alleviate harm to the environment, short sea shipping (SSS) is gaining popularity in transportation policy formulation as an alternative transport mode for ecofriendly and cost-efficient transportation. There have been no studies of how to optimize intermodal container movement incorporating environmental aspects into SSS networks. This paper analyzes an intermodal transportation problem of international container cargoes while incorporating the external costs of the modes into an optimization model in South Korea. The objective of the problem is to minimize the total logistic costs, that is, shipping and land transportation costs, as well as external costs such as air pollutants (particulate matter, nitrogen oxide, sulfur dioxide, and volatile organic compounds) and greenhouse gases (carbon dioxide). The results of the model show a strong foundation for encouraging more environmentally friendly modes, such as SSS and rail, and a well-balanced modal shift if transport policy is formulated in this direction.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2166, s 99-108, 2010

ISBN: 9780309142991

Godsknutepunkter: struktur og effektivitet

Grønland, Stein Erik; Hovi, Inger Beate

http://www.toi.no/getfile.php/Publikasjoner/T%D8I%20rapporter/2011/1128-2011/1128-2011-elektronisk.pdf

I tilknytting til transportetatenes arbeid med forslag til Nasjonal transportplan har arbeidsgruppa for effektive godsknutepunkt foreslått et sett av casestudier som skal bidra til å overføre gods fra veg til sjø og bane. Analysene er gjennomført med utgangspunkt i nasjonal godstransportmodell. I tillegg er det gjennomført analyser av caseeksempler for flere av scenarioene som et supplement til modellkjøringene. For utenrikstransport med lastebil er det særlig området rundt Göteborg som skiller seg ut med størst godsvolum til/fra Osloregionen. Godsvolumet er tilstrekkelig til å etablere en togrute med god frekvens, men avstanden til Oslo er i korteste laget til at jernbane er konkurransedyktig overfor lastebiltransport. Det er også tilstrekkelig godsgrunnlag for et jernbanetilbud fra Syd-Sverige inkludert København og fra Syd-Jylland. Også fra Rotterdam er det et tilstrekkelig godsgrunnlag for et daglig togtilbud, men et slikt tilbud bør koordineres med transport fra Nord-Tyskland og Syd-Sverige. En caseberegning viser at det er potensiale for jernbanetransport fra Rotterdam til Oslo også ut fra et kostnadsperspektiv for brukerne. Beregninger viser at dagens havnestruktur rundt Oslofjorden er bedre enn alternative løsninger både med hensyn til kostnader og eventuelle mål om større transport på sjø.

Transportøkonomisk institutt, (TØI) TØI rapport 1128/2010 0808-1190

Oslo, 71 s, 2,76 MB, 2011

ISBN: Pappersversion: 978-82-480-1198-9, Elektronisk

version: 978-82-480-1191-0

Index terms: Freight terminal, Location, Port, Container (freight), Maritime transport, Rail bound transport, Intermodal transport (freight), Hub and spoke
Ämnesord: Godsterminaler, Läge, Hamnar, Containrar, Sjöfart, Järnvägstransporter, Intermodala transporter, Stråk och noder

Fungerar godstransportmarknaden effektivt?: ekonomisk analys av energieffektivisering av godstransporter

Nilsson, Jan-Eric; Mandell, Svante; Vierth, Inge

http://www.vti.se/sv/publikationer/pdf/fungerar-godstransportmarknaden-effektivt-ekonomisk-analys-av-energieffektivisering-av-godstransporter.pdf

En stor andel av landets sammanlagda förbrukning av energi används inom transportsektorn, och cirka en tredjedel av denna förbrukning avser godstrafik. Med undantag för åren direkt efter finanskrisen ökar godstrafiken från år till år, och därmed också energiförbrukningen. Denna rapport innehåller mot denna bakgrund en kvalitativ diskussion kring tre olika aspekter på godstransportmarknaden som skulle kunna innebära att denna utveckling inte är förenlig med en samhällsekonomiskt effektiv resursanvändning. En första förklaring till den ökade trafiken, och därmed förbrukningen av drivmedel och andra resurser, kan kopplas till de externa effekter som tung trafik ger upphov till. Det är väl känt att tunga lastbilar sliter på vägarna och ger upphov till utsläpp, olycksrisker, buller och trängsel. Det finns inga garantier för att marknadsaktörerna med automatik beaktar dessa effekter i de transportbeslut som fattas. Genomgången visar att uttaget av banavgifter och av drivmedelsskatter för tung trafik i genomsnitt är helt otillräckligt för att täcka dessa (marginal-) kostnader. Också med konservativa antaganden skulle skatten på drivmedel behöva fördubblas medan det finns skäl att höja banavgifterna med ännu mer. Kunskapsläget är ännu ofullständigt för att bedöma vilka förändringar som eventuellt skulle behöva genomföras av avgifterna på sjötransporter. Rapporten innehåller också en diskussion om konsekvenserna av andra tänkbara marknadsimperfektioner för marknadens sätt att fungera. I den utsträckning ett företag utövar stark kontroll av priset på någon del av godstransportmarknaden finns starka skäl att bryta upp ett sådant (lokalt) monopol. Men även om man inte bryter upp ett (eventuellt) monopol talar det mesta för att en politik som – tvärt emot vad som nu sagts – tar ut effektivitetsskapande skatter och avgifter av dem som använder infrastrukturen skulle innebära för små utsläppsminskingar. Risken är snarare den omvända, dvs. att transportmängderna skulle minska mer än vad som vore önskvärt. Inom branschen tecknas ofta kontrakt mellan exempelvis transportköpare och åkerier. Vissa sådana avtal, men långt ifrån alla, kan avskärma den ene eller båda parter från förändringar av priser, skatter och avgifter. När avtalen ska omförhandlas kommer emellertid den nya prisbilden att slå igenom. Avtalskonstruktioner innebär därför inte annat än att relativprisförändringar kommer att slå igenom med viss eftersläpning. I vissa avtalssituationer kan båda parter ha möjlighet att påverka energiförbrukningen. Incitamenten kan emellertid vara av en sådan art att de samlade motiven för förändringar är mindre omfattande än vad som är samhällsekonomiskt önskvärt. Problemet är att det är svårt att ge den ena parten korrekta incitament för att minska energiförbrukningen utan att samtidigt försämra incitamenten för den andra parten. I många fall måste man därför nöja sig med att försöka åstadkomma en så bra fördelning av incitamenten som möjligt. Det har inom ramen för detta uppdrag inte varit möjligt att närmare belysa hur detta skulle kunna gå till.

VTI notat 39-2012

Linköping, 40 s, 830,56 kB, 2012

Index terms: Fuel consumption, Cost, External effect, Tax, Fuel, Emission control, Carbon dioxide, Freight transport
Ämnesord: Bränsleförbrukning, Kostnader, Externa effekter, Skatter, Bränsle, Emissionskontroll, Koldioxid, Godstransporter

CombiPort: förutsättningar för svensk intermodal kustsjöfart

Falkenberg, Andrée; Persson, Kristoffer; Sökjer-Petersen, Sven

http://www.transportportal.se/ShipDocs/2014-01-21rec162255.pdf

Studien har visat att kustsjöfart kan vara ett ekonomiskt hållbart alternativ till längre landsvägstransporter, sett ur både samhällets och transportköparnas ögon. Växling av gods från väg till sjö hämmas dock både av den tröghet som finns i att få transportköpare att byta transportupplägg samt av den ledtidsökning som omställningen medför. Därför vore ytterligare kostnadssänkningar önskvärda, men studien visar inte på någon enskild kostnadspost som kan sänkas så kraftigt att det därigenom skulle bli förlösande för kustsjöfartens utveckling. Kostnadssänkningar måste till i alla led. Etablering av ett konkurrenskraftigt linjenät för kustsjöfart kräver uthållighet och engagemang från samtliga inblandade aktörer. Med tanke på dagens godsflöden och transportköparnas önskemål avseende lastbärare, ligger trailerbaserad RoRo?sjöfart i linjetrafik närmast till hands. Först på längre sikt är det realistiskt med ett containerbaserat linjenät, troligtvis med en stor andel 45' pallet wide containrar. Utökad kustsjöfart är samhällsekonomiskt lönsamt, vilket också krävs om staten skall leva upp till sina åtaganden enligt EU:s vitbok 2011 ? som innebär att 30 % av landsvägstransporterna över 300 km ska överföras till sjöfart och spårbunden trafik fram till år 2030. Slopade lots? och farledsavgifter är dock inte tillräckligt för att främja etableringen av kustnära fartygslinjer, särskilt med tanke på att detta inte kompenserar sjöfartens relativa kostnadsökning vid införandet av kommande utsläppsregler under SECA?direktivet (2015). För etablering av svensk intermodal kustsjöfart krävs fler rederisamarbeten samt en översyn av hamnarnas avgiftsstrukturer. Samverkan mellan befintliga informationssystem kan bidra till minskade ledtider, ökad effektivitet vid omlastning samt en minskad administrativ börda. Samtidigt kan ett gemensamt bokningssystem underlätta för mindre transportköpare att överväga kustsjöfarten. Eftersom speditören är den aktör som har minst att tjäna på ett godsflödesskifte från landsväg till sjöfart, är det möjligt att rederierna måste ta ett större ansvar för hela logistikkedjan framöver.

MariTerm AB

WSP

Höganäs, 260 s, 8,97 MB, 2013

Index terms: Maritime transport
Ämnesord: Sjöfart

Logistics service providers going green: insights from the Swedish market

Isaksson, Karin

http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-73991

During recent years pressures on the logistics and transport industry to involve and engage more in environmental work have increased. Governmental awareness of environmental impact has led to an increased pressure on the logistics and ,jnbv industry to reduce the emissions incurred by their operations. In addition, customers have become more interested and demanding regarding green initiatives in their purchasing of transport services. Although logistics service providers (LSPs) are becoming more aware of environmental problems, the development of green initiatives in the logistics and transport industry is described in the literature as being in its infancy phase. Considering the scarcity of studies on LSPs' green initiatives, a study that reveals potential factors influencing the adoption of green initiatives may be helpful to fill the knowledge gap and provide opportunities for further research in this field.; The purpose of this licentiate thesis is therefore to describe how different factors can affect the adoption of green initiatives among LSPs, and how the adoption of green initiatives can be reflected in the service offering. This includes identifying different kinds of triggers, drivers and barriers, as well as firm characteristics and describing how these factors can affect the adoption of green initiatives. Furthermore, ways in which the adoption of green initiatives can be reflected in the service offering are exemplified in order to answer the second part of the purpose.; The theoretical base in this licentiate thesis can be linked to general environmental logistics literature, sustainable service, and product development research. The research in this study is in its nature explorative and empirical data have been obtained from a cross case study of six companies, and a survey study investigating LSPs active on the Swedish market.; Based on the findings from the analysis, the LSPs studied have commenced to adopt green initiatives since they experience the pressure to adapt to future expectations and, understand the consequences. This will enable the LSPs to respond to the increasing and more global competition. Although increased competiveness seems to act as a trigger, the role of competitors as a driver affecting the adoption of green initiatives among LSPs are neither stressed in the case study nor singled out in the survey study as a significant driver. Increased, interest from customers and decisions from top management are both highlighted as triggers for LSPs to start adopting green initiatives, in the literature as well as among the LSPs studied.; The role of customers and top management also seem to be prominent drivers in the further green development. By adopting green initiatives, LSPs strive to win new customers and there is also a desire to improve customer relationships. Furthermore, the engagement and support from top management can be crucial for how successfully the adoption of green initiatives is integrated into the company and received by the employees. In addition, among the LSPs studied, their employees can be considered as an essential driver and a resource when adopting green initiatives.

Linköping University. Department of Management and Engineering. Linköping studies in science and technology. Thesis 1518 0280-7971

LiU-TEK-LIC 2012:03

Linköping, 133 s, 1,75 MB, 2012

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Index terms: Logistics, Freight transport, Sustainability, Development, Motivation, Market, Management, Profitability, Knowledge, Transport operator, Case study, Questionnaire

Ämnesord: Logistik, Godstransporter, Hållbar utveckling, Utveckling, Motivation, Marknad, Ledning och organisation, Lönsamhet, Kunskap, Transportörer, Fallstudier, Enkäter

Performance measurements in the greening of supply chains

Björklund, Maria; Martinsen, Uni; Abrahamsson, Mats

http://www.emeraldinsight.com/journals.htm?articleid=17014956

Purpose – In response to increasing demands on improved environmental performance, companies need to develop their capabilities in assessing the environmental performance of their operations. Knowledge among practitioners as well as solid research results in this area is lacking. This paper aims to present a framework of dimensions, which are important to consider regarding environmental measurement in supply chain management. The paper also aims to present a practical example on how environmental performance measurements can be a success by applying these dimensions.; Design/methodology/approach – Literature regarding logistics management and performance measurement is coupled with theories regarding environmental logistics and green supply chain management. A framework is developed. A case study based on four actors in a reverse supply chain is used to illustrate the framework.; Findings – The paper outlines important aspects to consider in the design of environmental performance measurements in supply chain management and identifies shortcomings in existing research. The case presents successful examples of how environmental performance measurements can be applied across managerial levels as well as company borders in a supply chain.; Practical implications – The literature review shows shortcomings in the measuring tools applied today. The case provides examples of how these shortcomings can be addressed.; Originality/value – This paper addresses the intersection between environmental logistics and performance measurements. The case shows how environmental performance measurements can be applied over a single company's borders by including four different actors in the supply chain.

Emerald Group Publishing Limited Supply chain management: an international journal 1359-8546, volym:vol 17 nr: nr 1, s 29-39, 2012

Index terms: Logistics, Management, Environment protection, Performance, Measurement
Ämnesord: Logistik, Ledning och organisation, Miljöskydd, Prestanda, Mätning

Moving freight with better trucks: improving safety, productivity and sustainability

The purpose of this report is to provide insights into the development of the heavy road freight transport system to facilitate development of policies to improve its productivity and its social and environmental sustainability. It presents a comprehensive review of current trucks performance.; The report first documents the recent trends in road freight transport in OECD and ITF countries and the logistics challenges in the road transport market, highlighting the need for a more efficient transport system. It reviews the regulations in place in OECD/ITF countries concerning weights and dimensions, technical standards, environmental standards, truck operations and transport operators. The report then presents the summary results of the performance benchmarking of 39 truck configurations across 10 countries, focusing on the safety and productivity impacts of changes in the configuration of heavy vehicles including weights and dimensions and articulation. It reviews the environmental challenges - in terms of local air pollutants and greenhouse gases - the safety challenges and the infrastructure challenges - for roads and bridges -of road freight transport, including technologies to mitigate their impacts. In this context, the report reviews the current use of higher capacity vehicles. The last part of the report focuses on options for an improved regulatory framework, including opportunities offered by performance based standards improved regulations, and the approached used to achieve compliance as well as the role of enforcement.

OECD Publishing.

International Transport Forum, ITF

Paris, 356 s, 2011

ISBN: 9789282102930

Index terms: Lorry, Freight transport, Logistics, Efficiency, Production, Capacity, Vehicle, Dimension, Increase, Size, Length, Weight, Evaluation

Green supply and demand on the logistics market

Martinsen, Uni

http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-68843

A well-known concept, both in practice and in literature is the logistics market. This market is a place where shippers' demand for logistics services meets Logistics Service Providers' (LSPs') supply of such services. Although this market has been given much attention in previous research, focus has been on shippers, while the LSP perspective has to a large extent been neglected. Several logistics related trends indicate that there is an increasing need for strong relationships between LSPs and supply chains, and one such trend is the "greening" of companies and supply chains. Although it is widely recognised that transports and logistics are a major cause of greenhouse gas emissions, environmental logistics literature has only focused on the interaction between LSPs and their customers to a very limited extent. This is despite the fact that LSPs could include so-called green categories in their offerings, just as shippers could include green categories in their demands and that this interaction could in turn contribute to a decrease of greenhouse gas emissions.; The purpose of this thesis is to describe the extent to which green categories are taken into account in the logistics market and suggest explanations. This includes identifying those green categories that are relevant for the logistics market, as well as a description of matches and mismatches with regard to these green categories. The matches and mismatches are studied from both a general market perspective and a relationship perspective. Initial explanations for the matches and mismatches in the relationship perspective contribute to the final part of the purpose.; There are two basic theoretical starting-points in this thesis. Firstly, it is recognised that the logistics market is important to the purpose and different ways to view this market are therefore discussed. Secondly, general environmental logistics literature provides a basis for the research into green categories that can be offered or demanded on the logistics market. In the exploratoryresearch conducted for the thesis, the insights from literature are combined with empirical datafrom a survey, a homepage scan and four case studies of buyer-supplier relationships.; One main contribution of this thesis is the large number of green categories that are identified as relevant for LSPs and shippers on the logistics market. These green categories range from environmental management systems, vehicle technologies and CO2 reports, to reviews of sustainability reports, relationship specific green projects and general desires among shippers to decrease CO2 emissions.; A comparison of the supply of and demand for the green categories indicates that from a general market perspective, there appear to be clear mismatches between green supply and green demand. The same comparison made from a relationship perspective also indicates severalmismatches between green supply and green demand, but the buyer-supplier relationships studied show matches between green offerings and green demands to a greater extent than the market perspective does. Interestingly, the LSPs seem to include more in their offerings than the shippers appear to include in their demands for almost all mismatches in both the market perspective and the relationship perspective.; Seven propositions are made to account for the matches and mismatches between green categories in buyer-supplier relationships. Three of these propositions are related to the characteristics of those green categories that are found in the relationships. It is suggested that the tangibility level of green categories influences the occurrence of matches and mismatches in the relationships and the more tangible a green category is, the higher is the likelihood of a match between supply and demand in that relationship. The opposite is also suggested, as well as the idea that the more relationship specific green categories are, the fewer the mismatches that appear in that relationship.; The remaining four propositions relate to the potential connection between the type of relationship between LSPs and shippers and green matches and mismatches in their relationships. It is suggested

that the closer a business relationship is, 1) the greater the number of green categories it has 2) the better green categories are communicated 3) the greater the number of matches compared to mismatches of green categories and 4) the higher the level of green category collaboration is.

Linköping University. Department of Management and Engineering Linköping studies in science and technology. Thesis 1496 0280-7971

LiU-TEK-Lic 2011:35

Linköping, 171 s + bil, 997 kB, 2011

ISBN: 978-91-7393-137-3

Index terms: Freight transport, Transport operator, Contract, Policy, Management, Emission control, Environment protection, Market, Demand (econ)
Ämnesord: Godstransporter, Transportörer, Avtal, Policy, Ledning och organisation, Emissionskontroll, Miljöskydd, Marknad, Efterfrågan

The impact of 3PL's green initiatives on the purchasing of transport and logistics services: an exploratory study

Evangelista, Pietro; Huge-Brodin, Maria; Isaksson, Karin; Sweeney, Edward

http://arrow.dit.ie/cgi/viewcontent.cgi?article=1054&context=nitlcon

There is a lack of research investigating the interaction and reciprocal influences between the buyer perspective and the supplier of transport and logistics services. Studies on the buyer perspective analyse the selection criteria to buy 3PL services, while research focused on green 3PL services examine initiatives undertaken by these companies to provide more environmentally sustainable services. The objective of this paper is to fill this void through an explorative case study analysis on the environmental attitude of 3PL companies in order to derive relevant implications for buyer's behaviour. The results provide useful guidelines to buyers for understanding awareness, initiatives as well as drivers and barriers affecting 3PLs' sustainability initiatives.

Dublin Institute of Technology. National Institute for Transport and Logistics Conference papers

Dublin, 15 s, 199 kB, 2011

Övrig info: Ingår i: Vision 20/20 - Preparing today for tomorrow's

challenges, Proceedings of the 20th International Purchasing

and Supply Education and Research Association (IPSERA)

Conference, Maastricht University, April 2011

Index terms: Freight transport, Environment protection, Transport operator, Policy, Administration
Ämnesord: Godstransporter, Miljöskydd, Transportörer, Policy, Administration

Green logistics: improving the environmental sustainability of logistics

McKinnon, Alan (ed); Cullinane, Sharon (ed); Browne, Michael (ed); Whiteing Anthony (ed)

The main objective of logistics is to co-ordinate the movement of products through the supply chain in a way that meets customer requirements at minimum cost. In the past this cost has been defined in purely monetary terms. As concern for the environment rises, companies must take more account of the external costs of logistics associated mainly with climate change, air pollution, noise, vibration and accidents. ”Green Logistics” analyses the environmental consequences of logistics and how to deal with them. Written by a leading team of logistics academics, the book examines ways of reducing these externalities and achieving a more sustainable balance between economic, environmental and social objectives.

Kogan Page

London, 372 s, 2010

ISBN: 9780749456788

Index terms: Freight transport, Environmental compatibility, Sustainability, Logistics, Carbon, Social cost, Fuel consumption, Efficiency

Matches and gaps in the green logistics market

Martinsen, Uni; Björklund, Maria

http://www.emeraldinsight.com/journals.htm/journals.htm?issn=0960-0035&volume=42&issue=6&articleid=17035993&show=pdf&PHPSESSID=43ggt7821o2kio69jlns5s1025

Purpose: The interface between Logistics Service Providers (LSPs) and shippers is an area that hasreceived little attention in previous research and even less has been done when environmentalissues are added to this interface. Nonetheless, the perception among researchers and the industryis that in many instances, supply and demand in this green interface does not coincide. The purpose of this paper is therefore to identify the matches and gaps between LSPs' green supplyand the shippers' green demand.; Design/methodology/approach: This paper is based on a web-based survey sent out to Swedish LSPs and shippers. A gapanalysis based on mean values and confidence intervals was conducted.; Findings: Findings indicate that the LSPs overachieve when it comes to green categories and also that theyare aware of this situation. Shippers, on the other hand, are interestingly not aware of this andthey seem satisfied with what they perceive is offered by LSPs.; Research limitations/implications: Contrary to previous research, this study specifies matches and gaps in the green LSP-shipperinterface. As the survey covers actors on the Swedish market, future research would benefit fromsimilar analyses from other countries.; Practical implications: The findings are of use for LSPs' understanding of shippers' environmental demand, and therebyenable them to adapt better to market demand. Similarly, shippers can use the findings tounderstand green supply and possibly change their demands accordingly.; Originality/value: This paper adds to the knowledge of the green LSP-shipper interface. Furthermore, it uses gapanalysis, which appears to be something not previously done within environmental logisticsresearch.

Emerald Group Publishing Limited International journal of physical distribution & logistics management 0960-0035, volym:vol 42 nr: nr 6, s 562-583, 2012

Index terms: Logistics, Transport operator, Environment protection, Supply, Questionnaire
Ämnesord: Logistik, Transportörer, Miljöskydd, Tillförsel, Enkäter

Greening the offerings of logistics service providers

Martinsen, Uni; Huge-Brodin, Maria

Purpose of this paper: The importance of green aspects for companies is increasing. Therefore logistics service providers have a possibility to compete by being greener than their competitors. One possibility is to offer services that include different green aspects. The purpose of this paper is to develop a description of possible green categories of a logistics offering, based on a combination of customer and logistics service provider perspectives.; Design/methodology/approach: A structured literature review showed what has been published on offerings and requirements regarding green logistics. Empirical data was collected in two steps. A survey was sent out to both shippers and logistics service providers and selected company homepages were scanned.; Findings: The paper identifies a range of green categories as well as more specific aspects that can be a part of logistics service providers' offerings. The findings consist of views from shippers as well as logistics service providers.; Research limitations/implications (if applicable): The paper is mainly based on Swedish companies only and thereby provides a possibility to extend the research into other countries as well. Specific research on logistics companies' green offerings is still scarce and a multidisciplinary approach is recommended for future research.; Practical implications (if applicable): The paper provides insight into which green aspects logistics service providers can include in their offerings, as well as what customers could demand from logistics service providers.; What is original/value of paper: This paper illustrates both theoretically and empirically which green aspects that can be included in offerings and thereby providing logistics service providers with increased competitiveness alongside increased sustainability., s 969-984, 2010

ISBN: 978-87-92471-05-5

Övrig info: Ingår i: Proceedings of the 22nd Annual NOFOMA Conference :

Logistics and Supply Chain Management in a Globalised

Economy, June 10-11, 2010, Kolding, Denmark. Pp 969-984

Index terms: Logistics, Transport operator, Environment protection, Sustainability
Ämnesord: Logistik, Transportörer, Miljöskydd, Hållbar utveckling

The inclusion of green dimensions in the logistics market: a relationship approach

Martinsen, Uni

Purpose:; Despite the fact that cooperation is commonly mentioned as important in the greening of supply chains, interaction between logistics service providers and shippers are rarely investigated in green logistics literature. Moreover, the knowledge of how green factors are taken into consideration in relationships on the logistics market appears to be very limited. The purpose of this paper is therefore to analyse how green factors are taken into account in relationships between logistics service providers and shippers.; Research approach:; This paper is based on a multiple case study, where four dyads between logistics service providers and shippers are researched. Logistics service providers as well as shippers are selected based on their environmental ambitions in logistics as well as in a more general sense. Both a single-case analysis and a cross-case analysis are conducted, based on evidence primarily from interviews with employees that are involved in the specific studied relationships. Relationship dimensions are investigated in order to analyse similarities and differences in matches and gaps of various green categories in the relationships.; Findings and Originality:; Contrary to previous research, this paper sheds light on how green factors can be taken into account in specific relationships between logistics service providers and shippers. Matches and gaps between green offerings and green demands are identified and explained by relationship characteristics that appear in these specific company interactions. Four propositions are developed and it is suggested that the closeness of a business relationship has an impact on the inclusion of green factors in that relationship.; Research impact:; This research provides a first indication that relational factors are of importance for the success of “green relationships”. It would be fruitful to extend the research to cover a longer period of time to understand how the inclusion of green factors in logistics market relationship changes over time. Moreover, given that the case studies provide a description of relationships on a national logistics market, it would be beneficial to study other countries’ logistics market as well.; Practical impact::; The findings of this paper apply to both logistics service providers and shippers who have an ambition to green their logistics operations. Both actors can benefit from knowledge about which relationship dimensions that may be of importance in order to succeed with the greening of logistics service provider-shipper relationships., 2011

Övrig info: Presented at: Logistics Research Network annual conference,

Southampton, 7-9 September 2011

Index terms: Logistics, Transport operator, Sustainability, Environment protection, Personnel, Interview
Ämnesord: Logistik, Transportörer, Hållbar utveckling, Miljöskydd, Personal, Intervjuer

The role of logistics service providers in the development of sustainability-related innovation

Huge-Brodin, Maria

Logistics service providers (LSPs) are important actors in the supply chain, and due to the transport intensive activities they manage, they can make a large contribution to the development of sustainable supply chains. They are often considered as reactive and quite passive in their role vis-à-vis their customers though many possess the critical logistics capabilities required to make distribution operations less damaging to the environment. Developing green logistics service offerings can be one way of greening the whole supply chain, though today there appears to be little demand for these services. In the longer term, however LSPs are likely to benefit from being an environmentally innovative and to apply their environmental knowledge more effectively inside their organisations. This will strengthen their competitive position in a future logistics market in which environmental capabilities become major selection criteria. Many of the innovative systems and practices may not be motivated primarily by a desire to preserve the environment but will, nevertheless, contribute to sustainable development. To make a major commitment to greening client's supply chain, an LSP will often require a longer-term contract that supports investment in more environmentally friendly technology and business processes.

Hershey, PA, s 215-223, 2012

ISBN: 978-1-60960-585-8

Övrig info: Ingår i: Evangelista, Pietro (ed) et al: Supply chain innovation for competing in highly dynamic markets: challenges and solutions

Index terms: Logistics, Transport operator, Sustainability, Environment protection, Development
Ämnesord: Logistik, Transportörer, Hållbar utveckling, Miljöskydd, Utveckling

DOTEK: Digital Operativ Transportplanering för ökad Effektivisering och minskade Klimatutsläpp: fallstudie och metodutveckling av begreppet transporteffektivitet med avseende på ruttoptimering

Moen, Olof

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001501_001600/Publikation_001565/DOTEK%20Slutrapport.pdf

Frågeställningar kring hur ruttoptimering och IT-baserad transportplanering relateras till kostnads- eller miljöeffektiviseringar har dykt upp till och från inom transportbranschen. För att generalisera kan sägas att ruttoptimering fram till 2010-talet betraktats som något komplicerat där det visserligen funnits förståelse för de implementeringar som gjorts och de programvaror som används, men man har inte från transportbranschens sida varit beredd på att göra de nödvändiga organisationsförändringar som krävs för att uppnå effektiviserings-vinster, både vad gäller kostnadsbesparingar och miljöeffekter. Detta föranledde Vägverket Region Stockholm att initiera ett seminarium med rubriken ”Möte om ruttoptimering och bränslebesparing” den 2007-06-04 på Vägverkets kontor i Solna. Vid mötet fanns representanter för både transportbranschen och forskarsamhället och en fråge-ställning som behandlades var ”Skall vi överge idén att satsa på åkarna och istället satsa på kunden”. Frågeställningen har i ett vidare perspektiv bärighet för den framtida utvecklingen inom transportbranschen och kan ses i ljuset av vem som är ägare eller vid ett förändrat beteende; framtida ägare av transportplanering och det informationsutbyte som sker mellan transportköpare och speditör/transportör. Seminariet utgjorde avstamp för föreliggande rapport där en första projektbeskrivning presenterades för Vägverket 2008-11-25 med projekttitel ”Ruttoptimering och bränsle-besparing”. Under våren 2009 omarbetades projektplanen mot att innehålla dels en teoretisk ansats mot transporteffektivitet med transportgeografi som utgångspunkt, dels ett FUD-exempel hämtat från ett avskilt transportflöde med ett (a) nuläge, (b) en simulering av samma nuläge med ruttoptimering och (c) en implementering av ruttoptimering under en begränsad med syfte att dokumentera ett exempel.

WSP

uo, 4,01 MB, 95 s, 2010

Index terms: Freight transport, Route (itinerary), Optimization, Development, Method, Software, Data processing, Simulation, Case study
Ämnesord: Godstransporter, Rutter, Optimering, Utveckling, Metoder, Mjukvara, Databehandling, Simulering, Fallstudier

Transport quality –"Administrative and legal obstacles to improved quality of intermodal transport chains"

http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=71

The aim of this report is to support the overall aim of the project Transport Quality in relation to how legal, regulative and administrative routines block or hinder quality securing of intermodal transport chains in general. To achieve this, the report describes the legal framework, general intermodal market characteristics and its administrative routines based on literature review and interpretation as well as consideration of operational experiences from relevant market players whereas mainly transports from Sweden to Germany and Poland are considered. Potential impacts are being derived and described and practical recommendations elaborated which might support to overcome existing obstacles within intermodal transportation.

BMT Transport Solutions Ltd

Teddington, 45 s, 2,64 MB, 2010

Projektnamn: SiR-C, Swedish Intermodal Transport Research Centre

Index terms: Intermodal transport (freight)
Ämnesord: Intermodala transporter

Comparative Strategies for Developing Hinterland Transport by Container Barge: Analysis for Rotterdam and U.S. Ports

Konings, Rob; van der Horst, Martijn; Hutson, Nathan; Kruse, Jim

http://dx.doi.org/10.3141/2166-10

The development of intermodal barging has gained strategic importance in the hinterland transport systems of container seaports. This paper discusses strategies to develop container barge transport further as a hinterland system. This development is addressed in the context of U.S. ports, where container barge transport is still underdeveloped, and the Port of Rotterdam, Netherlands, which has the most extensive container barge hinterland system in Europe, but where continued development of container barge transport has been stagnating. A strengths, weaknesses, opportunities, and threats analysis is performed to define development strategies. Because of the different levels of container barge development in U.S. ports and the Port of Rotterdam, different strategies are needed. The main challenge for Rotterdam is to restructure the container barge hinterland system to restore its competitive strength in terms of cost and reliability, thereby enabling the port to handle much larger container volumes in an efficient way. The main causes of the problems are seaport related; that is, the inefficient handling of barges in the port, and hence the strategies used in Rotterdam should be focused on solving these problems. The causes of the underdevelopment of container barging in U.S. ports are much broader and, therefore, need a combination of general and context-specific strategies. A major conclusion is that in both cases multiple public- and private-sector actors have important roles to play to develop further the container barge hinterland system.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2166, s 82-89, 2010

ISBN: 9780309142991

Analysis of Stacking Priority Rules to Improve Drayage Operations Using Existing and Emerging Technologies

Huynh, Nathan; Zumerchik, John

http://dx.doi.org/10.3141/2162-01

Of the many emerging technologies being developed to expedite the flow of cargo through intermodal facilities, automated transfer management systems (ATMSs) have the potential to improve trucks' in-terminal dwell times significantly while the trucks are performing outbound or inbound moves. This paper presents a framework for integrating existing technologies (e.g., intelligent transportation systems, e-business systems) and emerging technologies (e.g., ATMSs) and using this framework to shorten the time for a drayage truck to pick up an import container. Shortening this time is of critical importance in reducing engine idling time and stop-and-go lugging time. Reduced truck idling translates directly into reduced diesel emissions, including emission of fine particulate matter, nitrogen oxides, and greenhouse gases. This paper specifically investigates the effect of priority rules for stacking containers into the ATMS to improve port drayage operations. The analysis of priority rules is made on the basis of a computer simulation model developed for this study, and the analysis of emissions reduction is based on the U.S. Environmental Protection Agency's SmartWay DrayFLEET model. The obtained results confirm the hypothesis that the earliest arrival time priority rule yields better drayage performance than the closest appointment time priority rule.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2162, s 1-8, 2010

ISBN: 9780309142922

Air Pollution Impacts of Shifting Freight from Truck to Rail at California's San Pedro Bay Ports

You, Soyoung; Lee, Gunwoo; Ritchie, Stephen G; Saphores, Jean-Daniel; Sangkapichai, Mana; Ayala, Roberto

http://dx.doi.org/10.3141/2162-04

Escalating concerns about air quality in southern California have led authorities at the Ports of Los Angeles and Long Beach, also known as the San Pedro Bay Ports (SPBP), to adopt a number of measures designed to mitigate emissions. One way to do this is to shift some of the containers currently transported by drayage trucks to trains. This alternative is attractive because it would decrease congestion and air pollution on the area's main freeways (I-710 and I-110) and the arterials that serve the SPBP. In addition, it would increase road safety along the busy Alameda freight corridor between the SPBP and downtown Los Angeles. One drawback would be an increase in pollutant emissions from train operations in the Alameda corridor; however, trains tend to pollute less than trucks per ton-mile, and new federal regulations are tightening the emissions standards for diesel locomotives. The goal of this paper is to quantify the net impact of such a modal shift on the emission of particulate matter (PM) and nitrogen oxides (NOX), the two air pollutants of most concern in the SPBP area. This analysis relies on microscopic simulation to capture emissions resulting from stop-and-go traffic on the freeways serving the SPBP. It was found that emissions of both NOX and particles less than 2.5 Âµm in diameter (PM2.5) can be significantly reduced by switching from drayage trucks to trains. This finding suggests that a modal shift should be encouraged, especially if there is unused train capacity and if the shift does not conflict with the shippers' interests.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2162, s 25-34, 2010

ISBN: 9780309142922

Impact of Truck Arrival Information on System Efficiency at Container Terminals

Zhao, Wenjuan; Goodchild, Anne V

http://dx.doi.org/10.3141/2162-03

This paper quantifies the benefits to drayage trucks and container terminals from a data-sharing strategy designed to improve operations at the drayage truck-container terminal interface. This paper proposes a simple rule for using truck information to reduce container rehandling work and suggests a method for evaluating yard crane productivity and truck transaction time. Various scenarios with different levels of information quality are considered to explore how information quality affects system efficiency (i.e., truck wait time and yard crane productivity). Different block configurations and truck arrival rates are also investigated to evaluate the effectiveness of truck information under various system configurations. The research demonstrates that a small amount of truck information can significantly improve crane productivity and reduce truck delay, especially for those terminals operating near capacity or using intensive container stacking, and that complete truck arrival sequence information is not necessary for system improvement.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2162, s 17-24, 2010

ISBN: 9780309142922

Referat från ”Workshop om intermodala transporter” 16-17 november 2010

Bärthel, Fredrik (red)

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001201_001300/Publikation_001294/Referat%20fr%c3%a5n%20Workshop%20om%20Intermodala%20Transporter%2016-17%20nov%202010.pdf

Föreliggande rapport sammanfattar 2010 års SiR-C Workshop som genomfördes som en studieresa med två seminarier i Hannover respektive Hamburg under 16-17 november 2010. SiR-C Workshop, finansierad genom Banverket och Vägverket (numera sammanslaget till Trafikverket), var den femte i ordningen och hölls denna gång i samarbete med Hamburg Port Consultancy och IVE, Universitetet i Hannover. Förutom forskningsnätverkets egna medlemmar medverkade representanter för Hamburg Port Consultancy, Universitetet i Braunschweig/Hannover, från Trafikverket samt intressenter från olika delar av transportbranschen. Totalt deltog ett trettiotal personer vid seminarierna. Seminariet i Hamburg var inriktat mot hamnar som megahubbar och hamnars kopplingar till inlandsterminaler. Seminariet i Hannover arrangerades av IVE/RMcon och programmet innehöll såväl interna som externa föredrag. De externa presentationerna fokuserade på IVE/RMcons forskning, och kompletterades av presentationer av Megahub Lehrte samt Green Cargos Intermodal Shuttles från Malmö till Hannover som startade i april 2010. Seminariet i Hannover inleddes med en presentation av Megahub Lehrte. Den inledande presentationen följdes av ytterligare tre presentationer kring forskning och konsultverksamhet av IVE/Rmcon. De externa presentationerna följdes av sex presentationer av forskningsresultat från SiR-C projekt med inriktning mot (1) utvärdering av intermodala transportkedjor, (2) organisation av intermodala transporter och (3) effekter av nya intermodala terminal-tekniker. Seminarierna avslutades med diskussioner relaterat till seminariet samt kring framtida ämnesinriktningar för forskning inom området intermodala transporter.

TFK - TransportForsK. Rapport 2010:5

Stockholm, 118 s, 27,6 MB, 2010

ISBN: 978-91-85665-40-2

Index terms: Intermodal transport (freight), Port, Freight terminal, Transport chain, Freight transport, Conference
Ämnesord: Intermodala transporter, Hamnar, Godsterminaler, Transportkedjor, Godstransporter, Konferens

Agent based intelligent goods

Jevinger, Åse; Davidsson, Paul; Persson, Jan A

http://www.bth.se/fou/Forskinfo.nsf/Sok/8d1ec3b727628f2ac125772f0032011a/$file/ATT2010.pdf

The purpose of this paper is to present a framework for intelligent goods and to relate this framework to software agents. It includes a description of how different levels of intelligence connected to the goods can be categorized, as well as of the different possibilities of locating information and processing. Additionally, we present three different types of transport services based on intelligent goods, and show how these can be realized using agents. These agents are finally related to our presented framework.

Blekinge tekniska högskola

Karlskrona, 111 kB, 10 s, 2010

Index terms: Freight, Logistics
Ämnesord: Gods, Logistik

On the integration of optimization and agent technology for transportation and production planning

Holmgren, Johan

http://www.bth.se/fou/Forskinfo.nsf/Sok/92a0859eaa087920c12577af0033ae3b/$file/Avhandling%20Johan%20Holmgren.pdf

This thesis concerns the integration of agent technology and mathematical optimization for improved decision support within the domain of analysis and planning of production and transportation. These two approaches have often been used separately in this domain but the research concerning how to combine them is very limited. The studied domain is considered to be complex due to the fact that many decision makers, which influence each other, often are involved in the decision making process. Moreover, problems in the domain are typically large and combinatorial, which makes them more difficult to solve. We argue that the integration of agent-based approaches and mathematical optimization has a high potential to improve analysis and planning of production and transportation. In order to support this hypothesis, we have developed and analyzed three different approaches to the integration of agent technology and mathematical optimization.; First, we present a Multi-Agent-Based Simulation (MABS) model called TAPAS for simulation of decision-making and physical activities in supply chains. By using agent technology and optimization, we were able to simulate the decision-making of the involved actors as well as the interaction between them, which is difficult using traditional simulation techniques. In simulation experiments, TAPAS has been used to study the effects of different types of governmental taxes, and synchronization of timetables. Moreover, we provide an analysis of existing MABS applications with respect to a number of criteria. Also, we present a framework containing a number of abstract roles, responsibilities, and interactions, which can be used to simplify the process of developing MABS models.; Second, we present an approach for efficient planning and execution of intermodal transports. The approach provides agent-based support for key tasks, such as, finding the optimal sequence of transport services (potentially provided by different transport operators) for a particular goods transport, and monitoring the execution of transports. We analyzed the requirements of such an approach and described a multi-agent system architecture meeting these requirements.; Finally, an optimization model for a real world integrated production, inventory, and routing problem was developed. For solving and analyzing the problem, we developed an agent-based solution method based on the principles of Dantzig-Wolfe decomposition. The purpose was to improve resource utilization and to analyze the potential effects of introducing VMI (Vendor Managed Inventory). In a case study, we conducted simulation experiments, which indicated that an increased number of VMI customers may give a significant reduction of the total cost in the system.

Blekinge Institute of Technology. School of Computing Blekinge Institute of Technology doctoral dissertation series 2010:09

Karlskrona, 6,05 MB, 201 s, 2010

ISBN: 9789172951891

Index terms: Intermodal transport (freight), Logistics, Optimization, Route (itinerary), Model (not math), Simulation, Decision process, Thesis
Ämnesord: Intermodala transporter, Logistik, Optimering, Rutter, Modeller, Simulering, Beslutsfattande, Doktorsavhandling

Analysis of transport services based on intelligent goods

Jevinger, Åse; Persson, Jan A; Davidsson, Paul

http://www.bth.se/fou/Forskinfo.nsf/Sok/9052113e32601a2bc125773f00402def/$file/59250.doc

The purpose of the first part of the paper is to identify a set of services that potentially can be provided by intelligent goods, and to show what is needed, from a functional perspective, to realize these types of services. In particular, we focus on what information and functions are required. The purpose of the last part of the paper is to present some of the most important factors affecting the placement (e.g. goods, vehicle or ERP level) of the information and processing required by a service. We also discuss how these factors affect our identified services.

Blekinge tekniska högskola

Karlskrona, 16 s, 2010

Index terms: Freight, Freight transport, Logistics
Ämnesord: Gods, Godstransporter, Logistik

Assessment of telematic systems for road freight transport

Mbiydzenyuy, Gideon

http://www.bth.se/fou/Forskinfo.nsf/Sok/99d5d6f266878c6bc12577e5002fa5a2/$file/LIc%20Gideon%20Mbiydzenyuy.pdf

The focus of this thesis is the assessment of telematic systems for road freight transport from a planning perspective. The aim is to support strategic decisions related to architectural choices for such systems, with the possibility to achieve synergies by supporting multiple telematic services. The past decade has witnessed enormous growth in cargo volumes resulting in increasing demand for transport capacity. To match this increasing demand only with expansion of infrastructure, e.g. road and vehicles, does not seem to be a sustainable strategy. One of the few approaches with the potential to improve the use of current transport capacity is the integrated use of modern information and communication technology, otherwise known as telematic systems for road transport, an important component within Intelligent Transport Systems (ITS). This type of systems can deliver multiple services that can be used to improve the efficiency and safety of road freight transport. However, attempts to unleash the potential of telematic systems and make maximum possible use of the available transport capacity have been hindered by several challenges ranging from planning and design to development and deployment.; Considering the large scope of possible telematic services that can potentially be deployed in road freight transport, this thesis suggests a framework in order to enable structured assessment of telematic systems. Based on the suggested framework, a set of potential transport telematic services are identified and a method for quantifying the value of the services to society is developed. The suggested method takes into account the expected impact on different transportation challenges, such as accidents, fuel consumption, and infrastructure maintenance. Quantitative methods are provided for studying the value of services sharing a common infrastructure. Using quantified benefits of services and costs of various functionalities required by telematic services, the concept of a multi-service architecture is investigated using optimization methods, which handles the multi-dimensional relations between different services that are otherwise difficult to analyze with traditional cost-benefit analysis. The analyses show which telematic services can be achieved with different approaches, such as vehicle-to-vehicle communication, vehicle-to-infrastructure communication, etc.; Although multi-service architectures are promising, several challenges need to be overcome, including security, service quality, privacy, and business models. The knowledge gained from the work presented in this thesis can be valuable for different stakeholders, such as governments, service providers, and transport service users, in fostering the planning, design, development, and deployment of telematic systems in transport.

Blekinge Institute of Technology. School of Computing Blekinge Institute of Technology licentiate dissertation series 2010:10

Karlskrona, 4,35 MB, 168 s, 2010

ISBN: 9789172951952

Index terms: Freight transport, Telematics, Intelligent transport system, Model (not math), Planning, Mathematical model, Cost
Ämnesord: Godstransporter, Telematik, Intelligenta transportsystem, Modeller, Planering, Matematiska modeller, Kostnader

Green Handshake: sustainable rail freight connections between Norway and Europe

Ludvigsen, Johanna; Klaeboe, Ronny

http://www.toi.no/getfile.php/Publikasjoner/T%D8I%20rapporter/2010/1118-2010/1118-2010-el.pdf

Overføring av internasjonalt gods fra veg til jernbane har positive klimavirkninger. En sparer 85 prosent av oppvarmingen per tonnkm. Å få til en slik overføring er imidlertid lettere sagt enn gjort. Importen av varer fra Europa øker mer enn eksporten, og kommer fra ulike opprinnelsesland og steder. Et nærliggende tiltak for å sikre gode og regelmessige pendelforbindelser som kan ta disse transportene, er oppretting av "Rail Ports" – inngangs¬portaler til Norge på Kontinentet. Her kan vareforsendelser konsolideres og omlastes til jernbane. Et skritt i retning av å få etablert slike portaler er et samarbeid mellom norske myndigheter og deres motparter i EU-medlemsland, delstatsmyndigheter i eksempelvis Nord- Tyskland, og private transport- og logistikk-aktører. Brukerne må tilbys et servicenivå som gjør det attraktivt å bruke jernbane på store deler av strekningene.

Transportøkonomisk institutt, (TØI) TØI rapport 1118/2010 080-1190

Oslo, 20 s, 2,41 MB, 2010

ISBN: Pappersversion: 978-82-480-1197-2, Elektronisk

version: 978-82-480-1179-8

Index terms: Freight transport, Rail bound transport, Corridor (transp), Transport mode, Change, Carbon dioxide, Emission, Sustainability, Norway, Europe, Cross border traffic
Ämnesord: Godstransporter, Järnvägstransporter, Transportkorridorer, Transportslag, Förändring, Koldioxid, Emissioner, Hållbar utveckling, Norge, Europa, Gränsöverskridande trafik

The value of ITS on supply chain operations

Mirza Beiki, Vahid

The main purpose of this thesis is to identify the components of Intelligent Transportation System (ITS) for freight transportation. In addition, the purpose is to show in what way the ITS affects freight transportation functions and performance. The research is conducted through identification of the information types that are valuable for the actors of supply chains and the information types that freight ITS is using or supporting. Literature in the form of books, journal papers, conference papers, doctoral theses and licentiate theses on the value of information in supply chain, transportation information systems, ITS, smart goods, traceability and their correlated terms and concepts are reviewed to create a theoretical framework for the study. Empirical studies in the form of case studies are conducted to fulfill the purpose. Interviews, reviewed documents, archival records and direct and participant observations are used as sources of empirical data. The information that are used by different actors for supporting different functions in supply chains and the level of value of the information for the actors is determined as a finding of the thesis. Also the components of the ITS for freight transportation (freight ITS) are identified. The types of information that freight ITS uses or supports frequently for the transportation operations are studied and the transportation functions and performance dimensions improved by the freight ITS are recognized. In addition, effects of using the smart goods—as an element of the freight ITS, on traceability of goods—as a transportation function, is identified as a finding of the thesis. This thesis creates an overview regarding applications of ITS for the freight transportation operations. It could be used as a decision support tool for transportation companies for applying ITS based on the transportation information types, functions and performance dimensions they need to support. The findings can be useful for operations managers of the supply chains and governmental authorities to understand the effects of using smart goods to manage and control their supply chain information and material flow. This thesis adds to the literature written on the value of information in supply chains, ITS and smart goods. Furthermore, the thesis contributes to the field of RFID and product traceability especially in fresh food supply chains.

Chalmers University of Technology. Department of Technology Management and Economics.

Division of Logistics and Transportation.

Licentiate thesis, report L2010:047

Göteborg, 51 s + bil (48 s), 2010

Index terms: Freight transport, Freight, Intelligent transport system, ITS

Integrating freight into NEPA analysis. Final report

Ahanotu, Dike

http://ops.fhwa.dot.gov/publications/fhwahop10033/nepa.pdf

The efficiency and effectiveness of freight transportation is critical for economic growth and development, ensuring livable communities, and creating a sustainable human and natural environment. It is increasingly important to integrate freight transportation issues and solutions throughout the transportation planning and project development process. This handbook is designed to provide information on freight transportation to: 1) professionals responsible for advancing transportation projects through the National Environmental Policy Act (NEPA) process analysis; and 2) public and private sector freight stakeholders interested in advancing freight transportation projects utilizing public sector highway funds that require NEPA analysis. NEPA requires analysis of the impacts of proposed Federal activities on the natural and human environments. Therefore, the use of Federal-aid highway funds to implement a transportation project requires that the project be advanced through the NEPA process as defi ned in law and regulation. This handbook considers freight transportation from two perspectives: 1) a project that itself is designed to resolve a freight transportation issue or need; and 2) a project in which freight-related features (warehousing, access to intermodal facilities, loading docks, etc.) could be affected by the project's design and location.

U.S. Department of Transportation. Federal Highway Administration. Office of Operations.

Cambridge Systematics, Inc

Washington DC, 30 s, 1,12 MB, 2010

Index terms: Freight transport, Sustainability, Environment protection, Planning, Administration, Financing, Government, USA

North American marine highways

Kruse, C James; Hutson, Nathan

http://onlinepubs.trb.org/onlinepubs/ncfrp/ncfrp_rpt_005.pdf

This report explores the potential for moving intermodal containers on chassis, non-containerized trailers, or rail cars on marine highways in North America. The report includes an assessment of the conditions for feasibility; an analysis of the economic, technical, regulatory, and logistical barriers inhibiting greater use of the marine highway system; and potential ways to eliminate these barriers.

National Cooperative Freight Research Program. NCFRP report 5

Washington DC, 99 s, 3,09 MB, 2010

ISBN: 9780309154895

Index terms: Inland waterway, Freight transport, Maritime transport, Increase, Development, USA

Potensial for overföring av gods til intermodale transportlösninger

Andersen, Jardar; Vingan, Anita

http://www.toi.no/getfile.php/Publikasjoner/T%D8I%20rapporter/2010/1074-2010/1074-2010-elektronisk.pdf

Forfatterne har gjennomført potensialberegninger for økt jernbanetransport til og fra utlandet og mellom de største byene i år 2020 ved å ta utgangspunkt i overføringspotensial fra dagens lastebiltransport og forventet fremtidig vekst fra basisprognoser for godstransport. Potensialet i 2020 tilsvarer anslagsvis 76-98 millioner sparte kilometer kjørt med lastebil på norsk område. Realisering av et slikt potensial fordrer imidlertid at jernbanen fremstår som et pålitelig transportalternativ, samt at jernbanen når et bredere spekter av varetyper. Ved overføring av maksimalt potensial kan de anslå utslippsreduksjoner på norsk område på opp mot 95 tusen tonn CO2 i 2020 som følge av redusert bruk av lastebil. Dette tilsvarer ca 0,5 % av de estimerte utslippene fra transportsektoren i Norge, og ca 0,15 % av de totale utslippene.

Transportökonomisk institutt, (TØI) TØI rapport 1074/2010 0808-1190

Oslo, 31 s, 1,37 MB, 2010

ISBN: 978-82-480-1084-5

Index terms: Freight transport, Intermodal transport (freight), Rail bound transport, Port, Capacity (traffic network), Impact study (environment), Emission, Carbon dioxide, Forecast
Ämnesord: Godstransporter, Intermodala transporter, Järnvägstransporter, Hamnar, Kapacitet (trafiknät), Miljöpåverkan, Emissioner, Koldioxid, Prognoser

Economic analysis of automated electric highway systems for commercial freight vehicles

Lavrenz, Steven Michael

http://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=1438&context=etd

Commercial highway trucking is a critical component for the reliable and inexpensive transport of freight goods in the United States. In addition to handling over 60% of all goods at some point in the transportation process, the number of truck ton-miles is increasing at a much higher rate than general vehicle miles traveled and lane miles of highway constructed. This growth will set the stage in the coming years for several critical issues that must be overcome by the trucking industry, such as congestion, safety concerns, emissions and fuel use. In order to overcome these challenges, it is evident that a radical approach must be considered to reducing the adverse effects of this mode of transportation, such as the development of an automated electric highway system (AEHS) for these commercial freight vehicles. The AEHS would be comprised of a grade separated system of autonomously controlled freight vehicles, with motive power supplied by inductive or magnetic resonant coupling with an electric source in the roadway. This thesis establishes a first-of-its-kind comprehensive economic analysis of the AEHS, including a detailing of the costs and benefits associated with a specific corridor of analysis. While various iterations of automated and electrified infrastructures have been analyzed for over 30 years, little has been done to quantify the components necessary to begin the process of economic decision-making with respect to investment and operations. The proposed methodology identifies numerous direct and indirect costs and benefits associated with a hypothetical implementation of this technology on the Interstate 70 corridor in Missouri during the period 2011-2040. This methodology draws on basic principles of quantifying benefits such as travel time savings and user cost savings from reduced crashes and congestion, and utilizes detailed construction cost information developed by the Missouri DOT for a system of conventional truck-only lanes along the same corridor. Furthermore, the EPA-developed MOVES software was used to estimate the impacts on emissions and energy use along the AEHS corridor as part of the benefit-cost analysis. The estimation results suggest that application of AEHS on the study corridor would be economically feasible, with a positive net value in terms of present costs and benefits of approximately $2.4 trillion over the 30-year project lifecycle. Additionally, it is estimated that petroleum use would decrease by over 25%, while emissions would decrease by up to 27%, depending on the pollutant being considered. Various sensitivity analyses were also performed, in order to assess the impact of different demand estimates for the system, along with varying estimates of the costs associated with the technology components on the AEHS. While the final economic evaluation outputs were sensitive with respect to these factors, it was found that these sensitivities were relatively inelastic, and that even for the worst-case cost and benefit scenarios, the project was economically favorable to pursue. This thesis represents one of the first attempts to quantify the direct and indirect costs and benefits of this widely discussed technology, and can serve as a guiding methodology for evaluation of upcoming intelligent transportation system technologies.

Iowa State University Graduate Theses and Dissertations Paper 10392

Ames, IA, 157 s, 2,58 MB, 2011

Omvärlds- och framtidsanalys: längre och tyngre väg- och järnvägsfordon

Mellin, Anna; Ståhle, Johanna

http://www.vti.se/sv/publikationer/pdf/omvarlds--och-framtidsanalys--langre-och-tyngre-vag--och-jarnvagsfordon.pdf

VTI har tidigare visat på samhällsekonomiska fördelar med att använda längre och tyngre vägfordon än övriga EU, det vill säga 25, 25 meter och 60 ton. Sammodalitetsprojektet syftar till att undersöka de samhällsekonomiska konsekvenserna av att använda ytterligare längre och/eller tyngre vägfordon samt järnvägsfordon. Det här första delprojektet syftar till att besvara vilka dimensioner och viktbegränsningar för väg- och järnvägsfordon som Sammodalitetsprojektet ska utreda vidare samt vilka olika effekter som bör beaktas. I studien har en litteraturstudie genomförts. För att fånga svenska intressenters och transportexperters synpunkter har en enkätundersökning genomförts där respondenterna även bjöds in till en hearing. Utgångspunkten för enkäten var perspektivet år 2030 och vilka väg- och järnvägsfordon som kommer att efterfrågas då. Resultaten visar på att inga extrema förändringar förväntas. I första hand är det utökad volymkapacitet som efterfrågas, inte utökad viktkapacitet. På vägsidan handlar det främst om att bygga vidare på det Europeiska modulsystemet, ett system som kombinerar olika standardiserade lastbärare och möjliggör att medlemsstaterna tillåts att ha avvikande dimensioner från övriga EU. För järnvägsfordon efterfrågas främst längre tåg, men även tyngre tåg. Trafiksäkerhet, infrastrukturslitage, trängsel, miljö och transportekonomi är de olika aspekter som identifierats som relevanta för längre och/eller tyngre väg- och järnvägsfordon.

VTI rapport 676 347-6030

Linköping, 77 s, 1,75 MB, 2010

Index terms: Heavy vehicle, Semi trailer, Container, Freight train, Dimension, Length, Weight, Axle load, Size, Questionnaire, Hearing, Demand, Forecast, EU, Intermodal transport

Intermodal transport from a haulier's perspective

Behrends, Sönke; Liljestrand, Kristina; Bäckström, Sebastian; Pahlén, Pehr-Ola

http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=58

Kostnadseffektiviteten för intermodala väg-järnvägstransporter är särskilt känslig för lastbilsforslingen eftersom denna verksamhet normalt har större kostnader än de andra delarna vid jämförelse av kostnad per del av sträckan. Lastbilsforslingen medför därför allvarliga konsekvenser för kvalitet och lönsamhet för intermodala lösningar och begränsar avsevärt de marknader där intermodalitet kan konkurrera med vägtransporter. I många fall är det åkerier som väljer transportsätt, dvs. beslutar om fjärrtrafik ska utföras med intermodala transporter eller vägtrafik. Att förbättra effektiviteten för lastbilsforslingen är därför viktigt för konkurrenskraften för intermodala transportsystem och åkerier kan som den aktör som gör valet av transportsätt spela en viktig roll i att utnyttja den förväntade tillväxten av intermodala transporter. Dessutom kan lastbilsforslingen minska de miljömässiga fördelarna med intermodala lösningar på grund av att diesel lastbilar utgör den största källan för utsläpp i den intermodala transportkedjan och motsvarar en betydande del av transportkedjans energibehov. Tillförlitliga uppgifter om miljöprestanda och energianvändningen av lastbilar, kapacitetsutnyttjandet, körsträckor etc. saknas, vilket gör det svårt att bedöma miljöförbättringspotentialen i en övergång från vägtransporter till intermodala lösningar. Trots dess betydelse för konkurrenskraft och miljöprestanda, har lastbilsforslingen och åkeriets roll försummats i forskning såväl som i den offentliga debatten. Detta projekt avser att kompensera för detta faktum och syftar till att fylla i en del av denna kunskapslucka. Projektet berör fem olika utmaningar som identifierades i en förstudie: 1, Hinder och möjligheter för ökat användande av intermodala transporter ur ett åkeriperspektiv. 2, Samarbete mellan åkerier för ökat användande av intermodala transporter. 3, Lastbilsforslingens miljöpåverkan. 4, IT-system för lastbilsforslingen. 5, Intermodala linjetåg från ett åkeris perspektiv.; Appendix 1: http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=59; Appendix 2: http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=60; Appendix 3: http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=61; Appendix 4: http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=62

SIR-C – Swedish Intermodal Transport Research Centre

Stockholm, 64 s, 2,36 MB, 2011

Index terms: Intermodal transport (freight), Transport operator, Choice, Use, Economic efficiency, Cost, Profitability, Transport mode
Ämnesord: Intermodala transporter, Transportörer, Val, Användning, Ekonomisk effektivitet, Kostnader, Lönsamhet, Transportslag

Intermodal transportation from a haulier's perspective: an analysis on how to increase to usage of intermodal road-rail transportation for hauliers in Sweden

Liljestrand, Kristina; Behrends, Sönke

http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=59

The purpose of this paper is to investigate what factors affect the hauliers' modal choice between all-road and intermodal rail road transportation (IRRT). It identifies strategies that can be applied for hauliers to increase the usage of IRRT. Design/methodology/approach; Based on an empirical study concerning the perspective of the transport industry on role of the hauliers in the IRRT-systems combined with a literature review, an analytical framework for the hauliers' modal choice in Sweden is designed. An interview-study and a survey with hauliers in Sweden currently using IRRT analyse the areas in the analytical framework. The findings are presented as obstacles and enablers for increasing the hauliers' usage of IRRT. The main types of obstacles for the usage of IRRT are: lack of profit with IRRT, shippers' requirements not being compatible with the intermodal rail operators' offer and operational difficulties. Depending on what obstacles the hauliers face, enablers like; company characteristics and different strategies can be applied to increase the usage of IRRT. Practical implications (if applicable); The findings can be used by actors with the incentives to increase the usage of IRRT among hauliers in Sweden. What is original/value of paper Most literature on IRRT limits the hauliers' role to be responsible for the pre- and post haulage activities. This paper takes a new perspective focusing on the haulier as the actor who does the modal choice. The originality of this paper is the analytical framework explaining the obstacles and enablers, which have rarely been discussed in the literature before.

Chalmers University of Technology, Department of Technology Management and Economics

Göteborg, 15 s, 360, 80 kB, 2011

Index terms: Intermodal transport (freight), Transport operator, Choice, Use, Cost, Profitability, Economic efficiency, Transport mode
Ämnesord: Intermodala transporter, Transportörer, Val, Användning, Kostnader, Lönsamhet, Ekonomisk effektivitet, Transportslag

Lastbilsforslingens del i den intermodala transportkedjan: delrapport: miljöstudie för svenska förhållanden

Bäckström, Sebastian

http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=60

Den typiska kombitransporten i Sverige har järnväg som huvudtrafikslag kompletterat med vägtransport med lastbil som anslutningstransport till och/eller från kombiterminalen. För att beräkna den miljöbelastning som skall kopplas till transporten av en godsförsändelse som transporteras intermodalt behövs relevanta emissionsdata för systemets huvudsakliga komponenter, järnvägstransporten, terminalhanteringen samt lastbilsforslingen. I ett tidigare projekt inom SIRC har miljödata för järnväg och terminalhantering utretts och förslag till relevanta miljödata presenterats, se Bäckström (2009). I detta avslutande projekt har motsvarande uppgifter för lastbilsforslingen sammanställts för svenska förhållanden med utgångspunkt från hur trafiken till och från ett urval av svenska kombiterminaler utförs.

WSP Analys & Strategi

Göteborg, 33 s, 5,65 MB, 2011

Index terms: Lorry, Freight transport, Trailer, Semi trailer, Fuel consumption, Emission, Carbon dioxide, Calculation
Ämnesord: Lastbilar, Godstransporter, Släpvagnar, Påhängsvagnar, Bränsleförbrukning, Emissioner, Koldioxid, Beräkning

IT-stöd för lastbilsforsling vid intermodala transporter

Pahlén, Pehr Ola

http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=61

En grundläggande förutsättning för effektiva godstransporter är möjligheten till effektiv kommunikation och hantering av information. För att verksamheten skall kunna bedrivas på ett effektivt sätt krävs att samtliga aktörer har tillgång till uppdaterad och aktuell information. För aktörer inom intermodala godstransporter, som ofta involverar flera parter med olika intressen och affärsmodeller, innebär detta stora skillnader med avseende på tillgängliga IT-system och hantering av data. För de åkerier som hanterar intermodala transporter skiljer sig behovet av IT-stöd beroende på den roll man har och på vilket sätt man använder sig av intermodala transporter i sin affärsverksamhet. Ett åkeri som endast utför enklare transporter mellan terminal och mottagare/avsändare och där flödet är repetitivt är behovet begränsat. För åkerier som aktivt använder intermodala transporter i sin verksamhet är frihetsgraderna fler och därmed också behovet av IT-system större. Historiskt sett har detta främst inneburit krav på administrativa lösningar avseende bokning och fakturering. I samband med att tillgången på information ökar och transportköparna kräver ökad insyn i det operativa flödet har dock även kraven på rapportering och information om eventuella avvikelser ökat. Det finns således grund att misstänka att framtida transportköpare kommer att kräva mer detaljerad operativ information än vad som är aktuellt idag. Det finns idag flera leverantörer som utvecklar avancerade IT-relaterade produkter och tjänster för transportsektorn. Denna utveckling har sedan en tid tillbaka inneburit att flera av de lösningar som efterfrågas av industrin finns tillgängliga på ett eller annat sätt. Problemet har dock varit att kostnaden för att implementera tekniken i flera fall överskridit den potentiella besparing som varit möjlig. Man har från industrins sida inte heller varit mogna att ta detta tekniksprång då man generellt sett inom transportbranschen har haft en låg IT-mognad. Specifikt har i denna rapport tagits fasta på de leverantörer som levererar IT-lösningar för intermodala terminaler och åkerier. Genom att integrera aktörernas informationssystem så att dessa kan utbyta information skapas förutsättningar för att effektivisera såväl terminalhantering som åkeriernas transportarbete. Goda förutsättningar finns för att dessa lösningar skall kunna lösa många av de problem som idag föreligger inom området intermodala godstransporter. Även åkeriets roll och informationsbehov och möjliga informationslösningar för framtida produktionssystem för intermodala transporter har kortfattat analyserats. För närvarande är erfarenheterna av denna typ av system mycket begränsade. Ej heller finns någon specifik IT-lösning utvecklad för denna typ av verksamhet. I samband med att åkeriet får en mer aktiv del i transportkedjan så kommer informationssystemen få större betydelse för den fysiska hanteringen av gods och lastbärare. Ökade tidskrav och generellt kortare ledtider i transportbranschen talar för denna utveckling.

WSP Analysis & Strategy

Chalmers universitet.

SIR-C Swedish intermodal transport research centre

Göteborg, 18 s, 630,57 kB, 2011

Index terms: Information documentation, Communication, Lorry, Transport operator, Intermodal transport (freight)
Ämnesord: Information, Kommunikation, Lastbilar, Transportörer, Intermodala transporter

The modal shift potential of intermodal line-trains from a haulier's perspective: drivers and barriers in the mode choice process

Behrends, Sönke

http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=62

Intermodal line-trains operating in corridor network designs are regularly promoted a means for intermodal transport to compete on transport costs and time with all-road transport for distances shorter than 500km. The purpose of this paper is to identify existing drivers and barriers to the usage of time and cost competitive intermodal in the decision making process of road hauliers who in many cases make the modal choice, i.e. deciding whether to outsource long-distance haulage to rail as an alternative to producing road haulage itself. This paper addresses the complexity of the mode choice that is often stressed in mode choice literature but more seldom explained. It looks into the potential of using an intermodal linetrain for the long-distance transport of consolidated cargo between a forwarder's terminals. In a multiple case study, the operations of four hauliers contracted by two forwarders in Sweden for the long-distance transport on two domestic routes (Göteborg – Malmö and Örebro – Stockholm) are assessed. In semi-structured interviews with four hauliers and two forwarders the drivers and barriers in the mode choice process for a modal shift are analysed. The results indicate that consolidated cargo is generally suitable for intermodal transport, but for outsourcing the long-distance haulage to rail the road hauliers face significant obstacles. The main barriers are a vehicle fleet that is not adapted for rail transport as well as small transport volumes and time-intensive terminal access that do not allow efficient PPH. Hence, in the current industry structure the modal shift potential for consolidated cargo is limited. New business models may be needed to reach transport volumes that allow efficient PPH operations, which in turn may lead to reduced business for road hauliers

Chalmers University of Technology. Department of Technology

Göteborg, 17 s, 684,79 kB, 2011

Index terms: Intermodal transport (freight), Transport mode, Choice, Rail bound transport, Cost
Ämnesord: Intermodala transporter, Transportslag, Val, Järnvägstransporter, Kostnader

MINT – model and decision support systems for intermodal terminal networks: Introduction

Östlund, Bo (ed)

http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=57

Era-Net Transport (ENT)

Falun, 23 s, 593,07 kB, 2011

Index terms: Freight terminal, Intermodal transport (freight), Transport network, Model (not math)
Ämnesord: Godsterminaler, Intermodala transporter, Transportnätverk, Modeller

CombiSec: proposal of unified cargo securing principles for road and combined transport trains

Hugoson, Petra; Andersson, Peter; Sökjer-Petersen, Sven

http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=53

The principles for cargo securing in Cargo Transport Units (CTUs) differs completely between the current rules and regulations for road and sea transports on one hand and rail transports on the other. This is not a favourable circumstance for combined transports, especially considering that: • the UIC Loading Guidelines can not be complied with in a steadily increasing fraction of the European fleet of CTUs, and • combined transports on rail are part of transports chains that normally starts with a road transport with CTUs that in principle always are loaded and secured by personnel at industries and terminals familiar with road transports only Thus, the research project "CombiSec – Proposal of unified cargo securing principles for road and combined transport trains" aims to identify cargo securing methods that are in accordance with valid road regulations and that could provide a sufficient and acceptable level of cargo securing during combined transports by rail.

Mariterm AB

Höganäs, 159 s, 18,89 MB, 2011

Index terms: Load fastening, Freight train, Lorry, Container (freight), Trailer, Method, Field (test), Specifications, Specification (standard), Intermodal transport (freight)
Ämnesord: Lastsäkring, Godståg, Lastbilar, Containrar, Släpvagnar, Metoder, Fältförsök, Riktlinjer, Standarder, Intermodala transporter

Pendeltrafik med flyggods på järnväg: en systemansats med omlastningsproblematik i fokus

Ölund, Anna; Jonsson, Rikard

Det huvudsakliga syftet med denna studie har varit att kartlägga möjligheterna att överföra den del av flygtransporterna som idag utförs som vägtransporter till en intermodal transportlösning där en del av vägtransportsträckan ersätts med en järnvägstransport. En del i detta har varit att kartlägga de problem som uppstår i samband med en sådan överföring av gods. Transporters miljöpåverkan har varit i fokus i media under en längre tid och det finns intresse från politiskt håll samt från allmänheten att minska den negativa miljöpåverkan som kan uppstå vid långa vägtransporter. Ett effektivt sätt att göra det är att flytta gods från väg till den miljömässigt sett mer hållbara järnvägen. Flygets tveksamma miljöprestanda har kritiserats och det finns ett stort intresse från branschen att förbättra miljöimagen. Att flytta gods från väg till järnväg kan då vara ett effektivt sätt. För att detta skall vara möjligt att genomföra krävs dock mer kunskap, bland annat om omlastningssituationen mellan väg- och järnvägstransport. Flyggods är i regel högvärdigt gods eller gods med speciella krav på snabb leverans. Då flygfrakt är dyrare än andra transporter krävs det att transportköparen gör ett medvetet val och anser att den ökade transportkostnaden är befogad. Detta medför att transportköparen även ställer högre krav på punktlighet, säkerhet och kvalitet. Innehållet och storleken på försändelserna skiftar mycket. En stor del av de varor och produkter vi stöter på i vårt dagliga liv har någon gång transporterats som flyggods.

TFK – TransportForsK TFK rapport 2011:8 0347-0970

Stockholm, 45 s, 2011

ISBN: 91-85668-50-9, 978-91-85665-50-1

Övrig info: Överföring från vägtransport till järnvägstransport

Index terms: Rail bound transport, Air transport, Intermodal transport (freight), Freight transport
Ämnesord: Järnvägstransporter, Luftfart, Intermodala transporter, Godstransporter

Referat från ”Workshop om Intermodala Transporter” 28 november 2011

Segerdahl, Sumile (red.); Bark, Peter (red.)

http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=68

Föreliggande rapport sammanfattar 2011 års SiR-C Workshop med teman: Aktuell intermodal forskning under 2010/2011, Modellutveckling och tillämpningar av modeller. Workshopen, som var den sjätte i ordningen, ägde rum den 28 november 2011 på Handelshögskolan vid Göteborgs Universitet (HGU) Banverket och Vägverket (nuvarande Trafikverket) finansierade under åren 2006-2009 ett FUD-centrum (SiR-C) inom området intermodala transporter. Syftet var att genom forskning, utveckling och demonstration (FUD) bygga upp kunskap om intermodala transporter samt att även förmedla denna kunskap så att den kommer till praktisk användning. Även om FUD-centrets verksamhet avslutades vid årsskiftet 2009/2010 pågår alltjämt en rad studier och projekt som finansierats genom FUD-centret. Dessa kommer att slutföras under de närmaste åren varvid ett antal intressanta slutsatser och rön årligen kommer att presenteras.

TFK – TransportForsK TFK rapport 2011:10 0347-0970

SiR-C, Swedish Intermodal Transport Research Centre

Stockholm, 82 s, 2011

ISBN: 978-91-85665-52-5, 91-85665-52-5

Index terms: Intermodal transport (freight), Container (freight), Semi trailer, Freight, Anchorage
Ämnesord: Intermodala transporter, Containrar, Påhängsvagnar, Gods, Förankring

GRO:NT: Green route optimisation and navigation for heavy trucks. Final report

Sena, Michael L; Hjälmdahl, Magnus; Svensk, Per-Olof; Wevers, Kees; Johansson, Anders

http://www.transportportal.se/PDBpubl/2012-05-02rec159642.docx

The Swedish program for strategic automotive research (FFI) financed a one-year study of energy efficient navigation for heavy vehicles beginning October 2010. Scania is the leading party in the project with participation by Navteq, Triona AB, Michael L Sena Consulting AB, the Swedish Transport Administration and the Swedish National Road and Transport Research Institute (VTI). The project has investigated the issues that can lead to the delivery of energy efficient navigation for heavy vehicles . A state-of-the-art study has been made analyzing data and usage issues, route optimization algorithms, the actors and business cases required for the accurate and timely data delivery to heavy vehicles. Concrete recommendations are presented concerning which are intended to serve as a foundation for an eventual full implementation of energy efficient navigation for heavy vehicles.

VINNOVA

Stockholm, version 0.4, 198 s, 2011

Projektnamn: Energieffektiv navigation för tung trafik

Index terms: Lorry, Navigation (route), Logistics, Route (itinerary), Planning, Optimization, Calculation, Method, Data acquisition, Real time
Ämnesord: Lastbilar, Navigation, Logistik, Rutter, Planering, Optimering, Beräkning, Metoder, Datainsamling, Realtid

Flexibla ledtider för intermodala transportlösningar

Ölund, Anna

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001401_001500/Publikation_001418/2011_9.pdf

Intresset för intermodala transportlösningar har ökat de senaste åren som en följd av en ökad miljömedvetenhet. En övergång från renodlade vägtransporter till intermodala transportlösningar med väg- och järnvägstransport förmodas leda till en minskad miljöbelastning i transportsystemet. Tidsmässigt anses dock intermodala transporter på väg och järnväg ha ett handikapp jämfört med renodlade vägtransporter. En transport som sker på väg och järnväg anses ofta vara mindre flexibel tidsmässigt än en renodlad vägtransport.; En fråga som bör ställas är huruvida strävan mot ett tidseffektivt logistiksystem, med avseende på ledtidskrav, påverkar företags möjligheter att välja intermodala transportupplägg med väg- och järnvägstransport. Möjligheten att övergå till intermodala transportlösningar kan hindras av ledtidsmässiga krav. Studiens syfte har varit att analysera om och hur förändrade/mer flexibla ledtider kan skapa förutsättningar för att öka användandet av intermodala transportlösningar på väg och järnväg samt hur överföringspotentialen till intermodala transportlösningar påverkas av ledtidskrav. I studien har ledtidsmässiga anpassningar både i det intermodala transportsystemet och i det transportköpande företagets logistiksystem utretts. Fokus har varit på att synkronisera transportköparens ledtidskrav med de ledtidsmässiga förutsättningar som råder i de intermodala transportsystemen.; I studien har framgått att tidsmässiga faktorer har en stor inverkan på transportköparens val av transportlösning. Vidare har framgått att tidsmässiga krav kan utgöra hinder för att välja en intermodal transportlösning på väg och järnväg. I tidsmässiga krav innefattas främst ledtiden, punktligheten i ledtid samt möjliga avgångs- och ankomsttider. Om en större mängd gods ska kunna transporteras intermodalt bör därmed anpassningar ske för synkronisering mellan transportköparens logistiksystem och det intermodala transportsystemet.; I studien har 3 olika ansatser analyserats: - Ledtiderna i det intermodala transportsystemet anpassas efter det transportköpande företagets ledtidskrav. - Det transportköpande företaget anpassar helt sin ledtid efter de förutsättningar som råder i det intermodala transportsystemet. - Det transportköpande företaget anpassar sin ledtid efter de förutsättningar som råder i det intermodala transportsystemet men med alternativa transportlösningar för en viss del av godset.; Det har i studien konstaterats att de ledtidsmässiga förutsättningar som råder i ett intermodalt transportsystem är svåra att påverka för enskilda transportköpare. Faktorer såsom järnvägens beroende av stora transporterade volymer, tidtabellsplanering som sker långt i förväg, flaskhalsar på terminaler, förseningar och överbelastning på populära sträckor och tider gör det svårt eller omöjligt att anpassa det ledtidsmässiga erbjudandet helt efter enskilda transportköpares ledtidsmässiga behov. En anpassning hos det transportköpande företaget blir därmed en förutsättning för att en tidsmässig synkronisering mellan transportköparens logistiksystem och det intermodala transportsystemet ska kunna ske.

TransportForsK AB TFK rapport 2011:9 0347-0970

Stockholm, 58 s, 2011

ISBN: 978-91-85665-37-2, 91-85665-37-1

Index terms: Intermodal transport (freight), Time, Logistics, Efficiency
Ämnesord: Intermodala transporter, Tid, Logistik, Effektivitet

State-of-the-Art: MINT Deliverable 1

Bärthel, Fredrik; Östlund, Bo; Floden, Jonas

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001301_001400/Publikation_001342/MINT_Deliverable_WP1%5b1%5d.pdf

This report forms a deliverable of Work package 1 ”State of the art in intermodal terminal network planning process, models and analysis of development needs” in the ERA NET ENT16 project MINT - model and decision support systems for intermodal terminal networks. The MINT project is a joint strategic and tactical trans-national project researching model and decision support system for evaluation of intermodal terminal networks. The outcome of the project is a system of models and methods to investigate and analyse costs and benefits for terminal networks as well as single terminals. The system is based on a number of models on different system levels. By combining these models a more complete spectrum of effects can be analysed.

MINT - model and decision support systems for intermodal terminal networks.

Era-Net Transport

uo, 4,12 MB, 175 s, 2011

Index terms: Intermodal transport (freight), Statistics, Austria, Germany, Norway, Sweden, Switzerland
Ämnesord: Intermodala transporter, Statistik, Österrike, Tyskland, Norge, Sverige, Schweiz

Framework for evaluation: MINT Deliverable 2

Floden, Jonas

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001301_001400/Publikation_001343/MINT_Deliverable%20WP2%5b1%5d.pdf

Work package 2 aims at creating a framework for evaluating terminal networks. This includes identifying the relevant actors in the system, their aims and goals and the assessment approaches used. This will be used as a base for the further model development within the MINT project, aiming at integrating a number of new and previously developed, models into a common framework. This report is a summary of work package 2 in the MINT project.

MINT - model and decision support systems for intermodal terminal networks.

Era-Net Transport

uo, 2,37 MB, 61 s, 2011

Index terms: Freight terminal, Intermodal transport (freight), Planning, Location, Decision process, Model (not math)
Ämnesord: Godsterminaler, Intermodala transporter, Planering, Läge, Beslutsfattande, Modeller

Modelling and simulation of intermodal terminal networks: MINT Deliverable 3

Schindlbacher, Edith; Häuslmayer, Hans; Gronalt, Manfred

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001301_001400/Publikation_001344/MINT_%20WP%203_modelling%20and%20simulation%20of%20intermodal%20terminal%20networks%5b1%5d.pdf

Following the aim of the project to develop a new and improved strategic model and decision support system (framework) for evaluation of intermodal transport and terminal networks, first the scope of the already existing models EvaRail, HIT and SimConT was aligned with the various (sub)areas of the intermodal transport system and research questions for the MINT project were defined. In the next step, the different interaction possibilities of the models were evaluated. Thus a comparison was made which output data of one model can be input data for another model.; These evaluations showed the need for complementing and filling gaps of the focus and scopes of the existing models. For this purpose, one model for calculating total costs of intermodal terminal operation (TermCost), and one conceptual model, which incorporates terminal operation and link operation (SimNet), were developed.

MINT - model and decision support systems for intermodal terminal networks.

Era-Net Transport

uo, 1,21 MB, 49 s, 2011

Index terms: Freight terminal, Intermodal transport (freight), Planning, Model (not math), Cost, Demand (econ), Calculation
Ämnesord: Godsterminaler, Intermodala transporter, Planering, Modeller, Kostnader, Efterfrågan, Beräkning

Green corridors criterias

Swahn, Magnus; Boll, Mats; Kotake, Catherine; Engström, Rikard

https://online4.ineko.se/trafikverket

Green corridors, including links and nodes, aims at enabling large scale transport solutions through sufficient infrastructure and supporting regulations in order to accomplish economic development through efficient transport logistics regarding; - cost, - environment, - quality, - traffic safety, - vulnerability risks. This criteria report presents criteria's for the environmental performance of multimodal transport services. To summarise, the report suggests what key performance indicators should be used (focusing on Energy use, CO2, NOX, SOX, and PM). Furthermore, an idea for a methodological approach for evaluating projects ex ante and ex post is proposed. To follow such a process is important for applications, projects etc to be treated in a common way.

Trafikverket Publikation 2010:040

Borlänge, 2,94 MB, 30 s, 2011

ISBN: 9789174671063

Index terms: Corridor (transp), Freight transport, Road transport, Sustainability, Emission control, Logistics, Fuel consumption, Carbon dioxide, Greenhouse gas
Ämnesord: Transportkorridorer, Godstransporter, Vägtransporter, Hållbar utveckling, Emissionskontroll, Logistik, Bränsleförbrukning, Koldioxid, Växthusgaser

Freight distribution problems in congested urban areas: fast and effective solution procedures to time-dependent vehicle routing problems

Figliozzi, Miguel

http://ntl.bts.gov/lib/35000/35700/35769/OTREC-RR-11-05_Final_1_.pdf

Congestion is a common phenomenon in all medium to large cities of the world. Reliability of freight movement in urban areas is an important issue to manufacturing or service companies whose operation is based in just-in-time approaches. These companies tend to provide high value or time sensitive products/services. As congestion increases, carriers face increasing challenges to satisfy their time sensitive customers in an economical way. Route designs or schedules which require long computation times or ignore travel time variations will result in inefficient and suboptimal solutions. Poorly designed routes that lead freight vehicles into congested arteries and streets not only increases supply chain and logistics costs but also exacerbate externalities associated with freight traffic in urban areas such as greenhouse gases, air pollution, noise, and accidents. Whilst it is rarely possible to entirely avoid the impacts of congestion, it is feasible to schedule operations so that the effects of congestion are minimized. Better scheduling can be effectively supported by the advent of inexpensive and ubiquitous Information and Communication Technologies (ICT). The use of mobile phone technology and on-board routing devices allows fluid communication between truck drivers and fleet operators in real-time. In such a real time operation it becomes possible to dynamically reassign vehicles, including modifying the order in which customers are served and diverting a vehicle already en-route to service another customer. However, without fast routing methods that can take advantage of real time congestion information carriers cannot reap the benefits of real-time information. From the operational point of view, congestion creates a substantial variation in travel times during peak morning and evening hours. This is problematic for all vehicle routing models which rely on a constant value to represent vehicle speeds. And while the ubiquitous availability of real time traffic information allows drivers to reactively alter routes and customer service sequences to better cope with congestion, static routing models are unable to take advantage of these advances in real-time information provision in order to proactively find adequate routing solutions. In addition, changes in travel time caused by congestion cannot be accurately represented in static models. Research in time-dependent vehicle routing problem is comparatively meager and current solution methods are inadequate for practical carrier operations which need to provide fast solutions for medium to large instances. Even faster solution methods are essential to take advantage of real time information. The major aim of this proposal is to develop and evaluate new methods for vehicle routing in congested urban areas. The emphasis will be placed on improving the running time of the existing methods.

Oregon Transportation Research and Education Consortium.

Portland State University

Portland, OR, 780 kB, 60 s, 2011

Index terms: Lorry, Route (itinerary), Mathematical model, Urban area, Congestion (traffic), Delivery, Freight transport
Ämnesord: Lastbilar, Rutter, Matematiska modeller, Tätorter, Trafikstockning, Leverans, Godstransporter
Extra ämnesord: Algoritmer

European modular systems interaction with intermodal transport systems

Bark, P; Jonsson, R; Skoglund, M

http://road-transport-technology.org/conferenceproceedings/hvtt-12/

TFK has in cooperation with vehicle manufacturers, the former National Road Administration and The Swedish Association of Road Transport Companies among others, carried out studies concerning the use of longer and heavier vehicles according to the European Modular System (EMS) for road haulage. EMS is based on two different types of load-carriers: swap bodies and semi-trailers, both commonly used in Europe. Sweden and Finland are the only European nations that in general allow 25.25 m long vehicles according to EMS. Intermodal transport has long been recognized as a sustainable and efficient way to accommodate the increasing amount of cargo. Major research and development (R&D) have been undertaken in this area. However, this has not been corresponded by an equal increase in transport volume. In order to increase the interest in intermodal transport among haulers the economic synergies and other advantages of using intermodal transports needs to be communicated. This study presents two proposals of how to support a development towards increased use of intermodal transports among haulers by exceeding current EMS limitations. Firstly, a possible improvement to adopt the EMS system for intermodal transports is to implement road vehicle combinations consisting of three class C swap bodies with a length of 7.82 m and a maximum weight of 16 tonnes each. This would be possible with increased length restrictions of 27 meters. The gross weight would hence be approximately 64 tons and could be allowed especially in intermodal road connections. Secondly, a further step would be to implement double semi-trailers as currently tested. A purpose was also to map how EMS with current and future scenarios can facilitate intermodal transports. The study has estimated the intermodal compatibility of the largest Swedish fleet providers for load carriers. The study has also mapped the haulers view on intermodal transport using EMS. In general, haulers using intermodal transports are satisfied with the load carriers that already are in use for intermodal service. The possibility to use EMS vehicles and load carriers seem to be important, especially 25.25 m long vehicles as it provides more opportunities.

International Forum for Road Transport Technology

Stockholm, 10 s, 2012

Index terms: Lorry, Dimension, Length, Weight, Semi trailer, Container (freight), Intermodal transport (freight), Road transport
Ämnesord: Lastbilar, Dimension, Längd, Vikt, Påhängsvagnar, Containrar, Intermodala transporter, Vägtransporter

Future demands on container sizes and their impact on the truck of the future

Weijers, Stef; Kraaijenhagen, Ben; Szylar, Ilona; Jansen, Jan; Gräser, Henryk; Meijer, Niels

http://road-transport-technology.org/conferenceproceedings/hvtt-12/

To what extent will future demands of worldwide operating parties, regarding the (tertiary) packaging of their freight flows, determine or influence the future dimensions of freight trucks? That is the question we address to in this paper. In this study we have studied what container sizes may fit in the future demands of world trade and freight flows. We have identified several trends and studied its possible impact on the sizes of the truck of the future. Two serial projects have been carried out within the framework of the HTAS-EMS research pro-gram, in which amongst others MAN, University of Technology Eindhoven, TNO and HAN University of Applied Sciences cooperate in order to determine the requirements for the truck of the future. The first two projects of this research program have been carried out in order to determine possible influences of: • packaging on the requirement of Logistic Service Providers for the next generation of trucks (project I); • the pallet as an influence on the opportunities for intermodality of transport units, within the context of EU trade with emerging economies (project II). The first research project was part of a dissertation program for the MSc programme in Logistics and Supply Chain management of the University of Westminster (project I); the second, of a BBA programme in Logistics of HAN University of Applied Sciences (project II).

International Forum for Road Transport Technology

Stockholm, 15 s, 2012

Index terms: Container (freight), Size, Increase, Lorry, Dimension, Freight transport
Ämnesord: Containrar, Storlek, Ökning, Lastbilar, Dimension, Godstransporter

High Capacity Transports (HCT) in Sweden and Australia: experiences and road map to the future

Koniditsiotis, Chris; Sjögren, Jerker

http://road-transport-technology.org/conferenceproceedings/hvtt-12/

The freight transport task is growing rapidly and it is not possible to extend the infrastructure to meet that demand, particularly in scarcely and unevenly populated countries with large raw material sectors. Simultaneously there is an increasing pressure to lower the CO2 emissions and to improve road safety. This calls for much more intelligent utilisation of both infrastructure and vehicles, based on the advancement of information, communication and satellite based position technology. This paper is about a platform for collaboration between Sweden and Australia for joint R&D and technology transfer from Australia to deploy longer and heavier vehicles on parts of the Swedish road network. Special attention is given to regulatory reforms, PBS (Performance Based Standard), the IAP (Intelligent Access Program) for managing access, monitoring compliance, acceptance by public, politicians and industry, and a call for accelerating international standard setting and deployment.

International Forum for Road Transport Technology

Stockholm, 21 s, 2012

Index terms: Lorry, Freight transport, Sweden, Australia
Ämnesord: Lastbilar, Godstransporter, Sverige, Australien

Longer truck combinations in Germany: trial start in 2012

Glaeser, KP; Irzik, M

http://road-transport-technology.org/conferenceproceedings/hvtt-12/

According the EU Regulation 96/53/EG truck combinations in Europe (and Germany as well) may not exceed a length of 18,75 m for truck trailer units and 16,50 m for tractor- semitrailer units. The gross vehicle weight is limited to 40 t or 44 t in combined transport respectively. In a trial in Germany, beginning in January 2012, truck combinations of up to 25,25 m will be allowed on special routes defined by the Federal States, but not all Federal States take part in that trial. The maximum gross vehicle weight (GVW) will remain at 40 t or 44 t respectively. Five new longer truck combinations will be allowed in Germany in the trial: Elongated tractor-semitrailer combination (+1,30 m) [without route restrictions], tractor-semitrailer and additionally a center axle trailer, truck, (steerable) dolly and semitrailer, B-double, truck and trailer with max. length of 12 m each. The trial is applied for a five year period. The Federal Highway Research Institute (BASt) is commissioned by the German Ministry of Transport, Building and Urban Development to evaluate the trial with the longer truck combinations.

International Forum for Road Transport Technology

Stockholm, 6 s, 2012

Index terms: Lorry, Trailer, Dimension, Size, Weight, Length, Freight transport, Test, Germany
Ämnesord: Lastbilar, Släpvagnar, Dimension, Storlek, Vikt, Längd, Godstransporter, Test, Tyskland

The role of simulating commodity based freight networks in estimating the national benefits of introducing performance based standard vehicles into Australia

Hassall, K

http://road-transport-technology.org/conferenceproceedings/hvtt-12/

In 1999 the then National Road Transport Commission (NRTC) in Australia re-launched the concept of Performance Based Standards (PBS) for road freight vehicles. In 2010 the now National Transport Commission sought an evaluation of the national benefits for the take up of PBS. The solution to this problem nationally was through a combination of a) simulation modelling of road freight commodity networks linked to b) back end regression techniques. This simulation and econometric approach became the framework for the national benefit cost analysis. The observation that the physical networks traversed by trucks are very distinctive for different commodities is important in realistically calculating the benefits of seeding PBS vehicles into existing fleets. Examining these commodity networks, now worked with a mix of conventional and PBS vehicles, forms a new approach in the analysis of road transport productivity, for both long distance and urban freight. The results, based on this network simulation approach, is a template for many nations to use. From the aspect of sustainability and efficiency this case study is instructive.

International Forum for Road Transport Technology

Stockholm, 14 s, 2012

Index terms: Lorry, Trailer, Dimension, Size, Length, Weight, Freight transport, Cost
Ämnesord: Lastbilar, Släpvagnar, Dimension, Storlek, Längd, Vikt, Godstransporter, Kostnader

Vad skulle en likabehandling av transportslagen innebära för näringslivets transportval: exemplifiering för några varuslag och relationer

Vierth, Inge

http://www.transportportal.se/swopec/CTS2012-20.pdf

In CTS Working Paper 2011:14 it is shown that the balance between road, rail and sea transports for long distance freight transports in, to and from Sweden in 2015/16 would shift in favour of road transports. The result follows the prediction that the sea transport costs increase slightly less than rail transport costs if the government gives all modes an equal liability for external costs and applies the same funding model for all modes. The current report analyses based on a literature review and interviews with shippers how the changed transport costs would influence mode choice. It is shown that the companies are price sensitive, independently of the mode of transport. The transport costs (per tonkm) for sea and rail are low when economies of scale are realised. But there is a trade-off between low transport costs and high frequencies. Transport chains that make use of economies of scale for sea and rail transports often contrast to "small scale chains" that go via the nearest port. The role of the forwarders is crucial when it comes to transport solutions that affect several shippers as consolidation of goods volumes or usage of unbalanced flows. Preferences to change to other modes differ between different sectors and between inbound and outbound transports etc. The overall picture is that shippers and forwarders' preference to use sea transports instead of land transports is limited. The existence of economies of scale in different parts of the transport system and the shippers' demand of many departures can be seen as hinder for small scale sea transports through the many ports on the Swedish coastline.

Centre for Transport Studies Stockholm Working papers in Transport Economics 2012:20

VTI

KTH Royal Institute of Technology

S-WoPEc, Scandinavian Working Papers in Economics

Stockholm, 34 s, 428,90 kB, 2012

Index terms: Freight transport, Transport mode, Cost, Competition, External effect, Road transport, Rail bound transport, Inland waterway transport, Intermodal transport (freight)
Ämnesord: Godstransporter, Transportslag, Kostnader, Konkurrens, Externa effekter, Vägtransporter, Järnvägstransporter, Inlandssjöfart, Intermodala transporter

Godsövergångar: en studie för Trafikanalys

Skoglund, Mattias; Bark, Peter

http://www.trafa.se/PageDocuments/Godsoevergaangar_-_En_studie_foer_Trafikanalys.pdf

Det huvudsakliga syftet med denna redovisning är att svara på frågeställningen om hur väl övergångar mellan trafikslagen fungerar för gods i Sverige. De transportslag som analyseras inom ramen för detta arbete är väg, järnväg, sjöfart samt flyg. Arbetet har främst inriktats på intermodala övergångar med ett antal belysta exempel på multimodala transporter vilka ej utgör en delmängd av det intermodala segmentet.

TFK - TransportForsk Uppdragsrapport 1/2012

Stockholm, 3,52 MB, 74 s, 2012

Index terms: Freight transport, Intermodal transport (freight), Freight, Transport chain, Freight terminal, Port, Container (freight), Equipment
Ämnesord: Godstransporter, Intermodala transporter, Gods, Transportkedjor, Godsterminaler, Hamnar, Containrar, Utrustning

Företagens logistikanalyser: åtgärder för bättre resurseffektivitet och mindre miljöpåverkan

Swahn, Magnus; Peterson, Andreas

https://online4.ineko.se/trafikverket

I takt med att verksamheter inom tillverkning och handel blivit allt mer leverantörsberoende har det strategiska värdet av effektiv logistik ökat. Styrning av försörjningskedjornas effektivitet har blivit en strategisk fråga för företag. Effektiva försörjningskedjor har fått en avgörande betydelse för att åstadkomma ett efterfrågat marknadserbjudande och en kostnadseffektiv verksamhet.Transportlogistik, som denna studie främst omfattar har tidigare utgjort ett förhållandevis styvmoderligt hanterat område som inte erhållit tillräcklig uppmärksamhet. På grund av större fokus på försörjningskedjor men även ökande drivmedelspriser samt ett ökande miljö-, och klimatfokus har dock transporterna fått en allt större uppmärksamhet som en betydande affärskritisk del av försörjningskedjorna. Sedan länge har transportlogistikanalyser genomförts inom ramen för företags förbättringsarbete. Analyserna har i huvudsak omfattat hur försörjningskedjornas kan stödja rätt marknadserbjudande, förbättrad servicegrad samt ökad kostnadseffektivitet. Fokus har med andra ord legat på både intäkter och kostnader för en bättre lönsamhet. En allt vanligare målsättning och ibland oväntad bieffekt vid logistikanalyser har varit att strävan om resurseffektivitet även reducerat företagets negativa miljöpåverkan. Tidigare studier visar att det finns reella och stora potentialer kring ökad resurseffektivitet som även minskat negativ miljöpåverkan. Frågan är dock vad som verkligen blir genomfört av föreslagna åtgärder och vilka de varaktiga effekterna blir? Studien syftar till att fördjupa och framförallt bredda kunskaperna kring hur logistikanalysernas identifierade förbättringspotentialer inom resursanvändning och miljöpåverkan för främst transporter ska kunna uppnås och vidmakthållas i verkligheten och vilka incitament som fordras för att detta ska ske mer automatiskt av marknadens aktörer. Att kvantifiera möjliga reduktionspotentialer är vanskligt och beror till stor del på vilken nivå som utgör initialt läge. I vår genomgång kan vi konstatera att det fordras en mångfald av åtgärder för att lyckas. Förbättringsarbetet måste inkludera alla delar av verksamheten samtidigt som suboptimering måste undvikas. Förbättringsarbetet bör inkludera:; - Minimera efterfrågan på transporter; - Utnyttja lastbärare maximalt; - Optimera storlek på lastbärare; - Utnyttja fordon och farkoster effektivt; - Optimera storlek på fordon och farkoster; - Minska total bränsleförbrukning (huvudmotor samt hjälpmotorer); - Förbättra bränslekvalitet (innehåll av skadliga ämnen samt andel förnyelsebar biomassa); Våra analyser visar att det finns stora möjligheter till förbättring. Ytterligare en viktig slutsats är att flera av dessa åtgärder sannolikt sänker relativa produktionskostnaderna för transporter. Risken är därmed uppenbar att trots uppnådda besparingar kommer dessa att leda till fortsatt; ökad efterfrågan av transporter vilket eliminerar dessa vinster mätt i absoluta tal. För att få en heltäckande bild av hur de egna transporterna utvecklas bör därför dessa följas upp i både relativa tal (effektivitet) samt absoluta tal (nytta).

Trafikverket Publikation 2012:236

Borlänge, 78 s, 5,16 MB, 2012

ISBN: 978-91-7467-427-9

Index terms: Logistics, Cost, Fuel consumption, Emission, Greenhouse gas, Transport operator, Lorry, Freight transport, Efficiency, Emission control
Ämnesord: Logistik, Kostnader, Bränsleförbrukning, Emissioner, Växthusgaser, Transportörer, Lastbilar, Godstransporter, Effektivitet, Emissionskontroll

Effekter av längre lastbilar och godståg i en internationell korridor

Vierth, Inge; Karlsson, Rune

http://www.vti.se/sv/publikationer/pdf/effekter-av-langre-lastbilar-och-godstag-i-en-internationell-korridor.pdf

I projektet studeras effekterna av att möjliggöra användandet av längre lastbilsekipage och/eller längre godståg i en trafikslagsövergripande godskorridor som sträcker sig från Mellansverige till Ruhrområdet. För närvarande är de minsta fordonen (max 18,75 meter för lastbilar i Tyskland och max 650 meter för tåg i Sverige) dimensionerande för transporterna i korridoren. Frågan som studeras är om/hur transportsystemet kan effektiviseras genom att bruka längre lastbilar och tåg var för sig eller i kombination i korridoren. Ett tiotal scenarier simuleras med hjälp av den nationella Samgodsmodellen som utgår ifrån en konstant godstransportefterfrågan. I vägscenario V1 tillåts 25,25 m långa lastbilar i vägkorridoren (som inkluderar färjan till/från Travemünde) och tillgången till vägkorridoren i Tyskland antas ske via terminaler. I järnvägsscenario J1 förutsätts att max 750 meter långa godståg trafikerar järnvägskorridoren (som går via Jylland). I scenario V1+J1 antas både längre lastbilar och längre tåg i korridoren. Effekter på godsflöden, tonkilometer, logistikkostnader och CO2-emissioner i och utanför Sverige har studerats och det gjordes mycket översiktliga samhällsekonomiska kalkyler.; Alternativ URL: http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001701_001800/Publikation_001789/Effekter%20av%20l%c3%a4ngre%20lastbilar%20och%20godst%c3%a5g%20i%20internationell%20korridorer.pdf

VTI rapport 764 0347-6030

Linköping, 54 s + bil (7 s), 2,48 MB, 2012

Index terms: Lorry, Freight train, Length, Impact study, Cost, Ton kilometer, Emission, Carbon dioxide, Corridor (transp), Estimation, Calculation, Freight transport
Ämnesord: Lastbilar, Godståg, Längd, Effektstudier, Kostnader, Tonkilometer, Emissioner, Koldioxid, Transportkorridorer, Skattning, Beräkning, Godstransporter

Transportköpares krav på kvalitet, miljö och säkerhet vid upphandling av godstransporter på järnväg

Johannesson, Staffan; Losman, Maria

https://online4.ineko.se/trafikverket

Ecoplan har på uppdrag av Trafikverket intervjuat nio utvalda företag med erfarenheter av köra sitt gods på järnväg:; AFAB; Coop; IKEA; LKAB; Polarbröd; Posten; SSAB; Stora Enso Skog och Enso Logistics; Volvo Logistics Services; Syftet med uppdraget har varit att få en bild av hur järnvägstransporter upphandlas och vilka krav – med avseende på miljö, säkerhet och kvalitet – som transportköpare ställer på utförarna i dessa sammanhang. Målsättningen har varit att öka Trafikverkets kunskap på området för att bättre kunna planera och prioritera kommande aktiviteter för utveckling av befintliga transporter av gods på järnväg och överflyttning av gods från, i första hand, väg till järnväg.; Det är slående att oavsett bevekelsegrund för att köra godset på tåg ser alla nio företagen det som en utmaning att få upp godset på järnväg, oavsett om företaget har eget tågbolag eller upphandlar transporten. Flera ser det dessutom som en utmaning att behålla godset på järnvägen.

Trafikverket Publikation 2012:125

Borlänge, 64 s, 7,14 MB, 2012

ISBN: 978-91-7467-324-1

Index terms: Rail bound transport, Freight transport, Enterprise, Interview
Ämnesord: Järnvägstransporter, Godstransporter, Företag, Intervjuer
Extra ämnesord: Upphandling, Transportmedelsval

Huvudrapport: Effektiva linjeterminaler: kartläggning och probleminventering avseende intermodala linjeterminaler

Bärthel, Fredrik

Tidigare forskning har visat att den geografiska tillgängligheten till intermodala transporter är grundläggande för att marknadsandelen för intermodala transporter skall öka mer än marginellt. Geografisk tillgänglighet kan åstadkommas genom ett tätare terminalnätverk där de olika terminalerna är förbundna med frekventa förbindelser och där godsflöden mellan regioner konsolideras i terminaler och noder för att erbjuda skalekonomi i länkarna. Terminaler i samma korridor kan i sin tur förbindas med driftsformen linjetrafikering. Genom ökad geografisk tillgänglighet kan de intermodala operatörerna bearbeta kundsegment med stora aggregerade flöden, men som idag är geografiskt och tidsmässigt för spridda för att kunna transporteras med konventionella intermodala transportsystem. Hypotesen i projektet var ett tätt nätverk trafikerat med frekventa förbindelser i enlighet med driftsformen linjetrafikering om det intermodala transportsystemet skall kunna konkurrera med lastbilen på andra marknader än marknaden för stora flöden över långa transportavstånd. Ett tätt terminalnätverk ställer krav på mer flexibla driftsformer, på nya tidseffektiva terminaler med låga fasta kostnader, samt krav på nya planerings- och styrningssystem.

TFK – TransportForsK TFK rapport 2012:1 0347-0970

Stockholm, 156 s, 2012

ISBN: 978-91-85665-51-8, 91-85665-51-7

Index terms: Freight terminal, Intermodal transport (freight), Hub and spoke, Container (freight), Semi trailer, Equipment
Ämnesord: Godsterminaler, Intermodala transporter, Stråk och noder, Containrar, Påhängsvagnar, Utrustning
Extra ämnesord: Lastbärare

Godstransport i korridorer: egenskaper og virkemidler for overføring av gods

Hovi, Inger Beate; Grønland, Stein Erik

https://www.toi.no/getfile.php/Publikasjoner/T%D8I%20rapporter/2012/1195-2012/1195-2012-elektronisk.pdf

Konkurranseflater mellom transportmidler i godstransport er analysert for ulike vareslag, avstander og korridorer knyttet til hhv innenrikstransport, import og eksport. Vi har beregnet overføringspotensial fra lastebil til jernbane eller sjøtransport, der vi for innenrikstransport har tatt utgangspunkt i alt godset som i dag fraktes med lastebil på distanser lenger enn 300 km, og som har en maksimumsavstand til jernbane- eller havneterminal på 25 km i hver ende. For utenriksgodset har vi ikke hatt samme informasjon om distanse til terminal og har derfor tatt utgangspunkt i identifiserte knutepunkt utenfor Norge. På grunnlag av dette finner vi et samlet overføringspotensial fra veg til sjø- og jernbanetransport som tilsvarer ca 26 % av transportarbeidet med lastebil på norsk område.

Transportøkonomisk institutt, (TØI) TØI rapport 1195 0808-1190

Oslo, 78 s, 3,00 MB, 2012

ISBN: Pappersversion; 978-82-480-1324-2, Elektronisk

version: 978-82-480-1317-4

Index terms: Intermodal transport (freight), Corridor (transp), Modal split, Transport mode, Change, Calculation
Ämnesord: Intermodala transporter, Transportkorridorer, Färdmedelsfördelning, Transportslag, Förändring, Beräkning

Framlast: development of intermodal cargo transport units

Andersson, Peter; Hugoson, Petra; Sökjer-Petersen, Sven; Jagelcak, Juraj; Vrábel, Ján; Skrúcaný, Tomáš; Ferleták, Jozef; Rovnaník, L'ubor

http://www.mariterm.se/download/rapporter/Framlast_report.pdf

Projektet FRAMLAST har genomförts inom ramen för det virtuella forskningscentret SiR-C -"Swedish Intermodal Research Centre". Synpunkter och kommentarer på dagens lastbärare från andra redan avslutade projekt inom detta centra samt frågor om framtidens lastbärare på medellång sikt (ca 20 år) födde projektidén FRAMLAST. Branschen har också funderingar om framtidens allmänt tillgängliga lastbärare; Hur kommer framtida lastbärare för kombinerade transporter att se ut? Kommer det att finnas andra lastbärartyper än idag? Vilken kapacitet, volym och dimensioner kommer de att ha och vilka möjligheter finns? FRAMLAST är en studie av utformandet av framtida lastbärare som ska gå i intermodal transport i Europa, med fokus på godset och dess hantering; både i dess helhet och på detaljnivå, med hänsyn tagen till olika typer av last, transportsätt, hanteringssätt, administration etc. Studien inkluderar även krav vid sjötransport. Vidare har de olika lastbärartyperna; semitrailers, växelflak, containers och flak, undersökts för att få fram respektive lastbärares starka och svaga egenskaper och om huruvida vissa förändringar i konstruktionen måste utvecklas för att underlätta för intermodal transport. Arbetet inom FRAMLAST är indelat i tre delar där del ett är en fortsättning på CombiSecprojektet för att försöka övertyga UIC (den internationella järnvägsunionen) att se över reglerna för att säkra last i kombienheter vid transport på järnväg så att de är i enlighet med reglerna för vägtransporter, del två är en global del där utformningen av framtida lastbärare för europeiska transporter studeras och den tredje delen är en studie av detaljer på lastbärare för att förbättra lastsäkring och godshantering.

MariTerm AB

University of Žilina. Department of Road and Urban Transport

Höganäs, 226 s, 2013

Index terms: Load fastening, Container (freight), Trailer, Specification (standard), Intermodal transport (freight), Europe
Ämnesord: Lastsäkring, Containrar, Släpvagnar, Standarder, Intermodala transporter, Europa

CombiPort: sammandrag: förutsättningar för svensk intermodal kustsjöfart

Falkenberg, Andrée; Persson, Kristoffer; Sökjer-Petersen, Sven

http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=74

CombiPort är ett forskningsprojekt som har drivits av MariTerm AB med stöd från WSP och Chalmers, Avdelningen för logistik och transport. Projektet har finansierats av Trafikverket och Sjöfartsverket inom ramen för det Intermodala Forsknings-, utvecklings- och demonstrationscentret SIR-C (Swedish Intermodal Research Centre). Projektets syfte är att belysa förutsättningarna för svensk intermodal kustsjöfart ur ett nulägesperspektiv, med utsiktsbedömningar rörande ett antal framtidsscenarion såsom höjda bunkerkostnader och slopade farledsavgifter. Innehållet i denna rapport utgör ett sammandrag av huvudrapporten ”CombiPort – Förutsättningar för svensk intermodal kustsjöfart”, daterad 2013-03-31.

MariTerm AB

WSP

Höganäs, 16 s, 1,53 MB, 2013

Projektnamn: SiR-C, Swedish Intermodal Transport Research Center

Index terms: Maritime transport
Ämnesord: Sjöfart

Modulfordons interaktion eller konkurrens med intermodala transportsystem

Ahlberg, Jesper; Bark, Peter; Jonsson, Rikard

http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=77

Intermodala transporter har under lång tid ansetts som ett hållbart och effektivt sätt att uppfylla ett ökat behov av långväga godstranssporter. Omfattande forskning och utveckling (FoU) har skett på detta område, vilket emellertid inte har medfört att mängden intermodala transporter ökat i motsvarande grad. För att öka intresset för intermodala transporter bland transportföretag måste ekonomiska, och andra, fördelar med att använda intermodala transporter kommuniceras. TFK har i samarbete med bland andra fordonstillverkare och infrastrukturhållare genomfört studier avseende långa och tunga vägfordon enligt det europeiska modulsystemet (EMS). Detta baseras på två typer av lastbärare, växelflak och påhängsvagnar, vilka är vanligt förekommande i Europa. Sverige och Finland är de enda europeiska länder som generellt tillåter 25,25 m långa fordon enligt EMS. I andra länder såsom Danmark, Holland och Norge, bedrivs försökstrafik. Ett syfte var även att kartlägga hur EMS med nuvarande och framtida scenarier kan underlätta intermodala transporter. I projektet bedömdes vidare den intermodala kompatibiliteten hos de största svenska innehavarna av lastbärare. Studien har också kartlagt transportföretagens syn på intermodala transporter med stöd av EMS-systemet.

TFK – TransportForsK TFK rapport 2013:3 0347-0970

Stockholm, 40 s, 1,71 MB, 2013

ISBN: 978-91-856665-59-4, 91-85665-59-2

Projektnamn: SiR-C, Swedish Intermodal Transport Research Center

Index terms: Lorry, Semi trailer, Length, Weight, Size, Dimension, Intermodal transport (freight)
Ämnesord: Lastbilar, Påhängsvagnar, Längd, Vikt, Storlek, Dimension, Intermodala transporter

Hållbara intermodala tempererade transporter

Ahlberg, Jesper; Skoglund, Mattias; Ölund, Anna

http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=82

Det har av tidigare TFK-studier framgått att de tempererade transporternas andel ökar inom dagligvarubranschen. Det finns vidare ett stort intresse av att utöka andelen intermodala transporter inom denna bransch. Det har emellertid funnits ett antal hinder av organisatorisk och praktisk karaktär som har bromsat utvecklingen. Detta har medfört att även den tekniska utvecklingen har gått långsamt då den inte har varit i fokus. Under en intermodal tempererad transport utgör tempereringsdelens energiförbrukning och miljöpåverkan en förhållandevis stor andel av den totala miljöpåverkan. Detta då transportarbetets påverkan minskar kraftigt i förhållande till rena vägtransporter. Det här projektets syfte har varit att skapa förutsättningar för att utveckla kostnadsmässiga och miljömässigt förbättrade tempererade intermodala transporter vilket skulle bidra till ökat intresse hos varuägarna att använda denna transporttyp. De tempereringsaggregat som används i samband med transporterna drivs nästan uteslutande av förbränningsmotorer men möjlighet finns att istället driva dessa med el. Därför har möjligheterna och effekterna av att använda el i så stor del som möjligt av den intermodala transportkedjan undersökts. De tekniska problemställningarna kring hur aggregaten skall kunna elförsörjas under transporterna har inte varit i fokus förrän i detta projekt. Det har varit av speciellt intresse att studera möjligheterna till eldrift då lastbärarna transporteras med eller står uppställda på järnvägsvagnar under järnvägens kontaktledning.

TFK – TransportForsK TFK rapport 2013:5 0347-0970

Stockholm, 52 s, 3,98 MB, 2013

ISBN: 978-91-85665-61-7, 91-85665-61-04

Projektnamn: SiR-C, Swedish Intermodal Transport Research Center

Index terms: Temperature, Cold, Container (freight), Semi trailer, Freight train, Energy consumption, Electricity, Freight terminal, Port, Intermodal transport (freight)
Ämnesord: Temperatur, Kyla, Containrar, Påhängsvagnar, Godståg, Energiförbrukning, Elektricitet, Godsterminaler, Hamnar, Intermodala transporter

Utveckling av idékoncept för miljöanpassade vägtransporter i intermodala transportkedjor: förstudie

Bark, Peter; Sebelius, Sara

http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=80

En långsiktig strävan har under många år varit att minska transporternas miljöpåverkan genom att öka andelen gods som transporteras i intermodala upplägg. En ofta förbisedd faktor för att skapa miljömässig hållbarhet har varit den länk i de intermodala transportkedjorna som utgörs av vägtransporter. På detta område finns en förbättringspotential avseende fordonsutformning, alternativa drivsystem respektive drivmedel samt upplägg för distribution av intermodalt gods. Syftet med förstudien var att genomföra en konceptuellt inriktad studie inom vilken de framtida systemkraven för en långsiktigt hållbar fordonsplattform för vägtransport av intermodala lastbärare i en intermodal transportkedja specificerades. Avsikten var att ta fram ett idékoncept som innefattar en miljöanpassad fordonsplattform för vägtransporter inkluderat distribution i tätorter av intermodala lastbärare. Plattformen förmodas bestå av en last- eller dragbil samt ett, eller flera efterfordon och förväntas utgöra en viktig beståndsdel i ett, utifrån miljöpåverkan och ekonomiska aspekter, långsiktigt hållbart vägtransportsystem för intermodala lastbärare.

TFK – TransportForsK TFK rapport 2013:7 0347-0970

Stockholm, 70 s, 15,83 MB, 2013

ISBN: 978-91-856665-63-1, 91-85665-63-0

Projektnamn: SiR-C, Swedish Intermodal Transport Research Center

Index terms: Alternative energy, Fuel, Lorry, Hybrid vehicle, Container (freight), Semi trailer, Fuel consumption, Intermodal transport (freight)
Ämnesord: Förnybara energikällor, Bränsle, Lastbilar, Hybridfordon, Containrar, Påhängsvagnar, Bränsleförbrukning, Intermodala transporter

Utvecklad terminalhantering med miljöanpassning av truckar och hanteringsutrustning

Skoglund, Mattias; Bark, Peter; Ölund, Anna

http://www.sir-c.se/getfile.ashx?cid=257832&cc=3&refid=81

Omlastning i intermodala transportkedjor utgör en betydande del av dess kostnad och miljöpåverkan. Framtida intermodala transportupplägg bör därför kunna erbjuda omlastning med lägre hanteringskostnader och bättre miljöprestanda än idag. I intermodala sammanhang har dock terminalhanteringens och omlastningens miljöpåverkan i stor utsträckning förbisetts då fokus legat på väg- och järnvägstransporternas miljöegenskaper. Problemet består främst i att en stor del av den utrustning som idag används vid omlastning och terminalhantering i Sverige är förbränningsmotordriven. På intermodala terminaler utgörs dessa främst av dieseldrivna truckar av typen reachstackers. Syftet med projektet är att utveckla ett nytt truckbaserat hanteringskoncept för intermodala terminaler samt hamnar vilket jämfört med dagens hanteringssystem erbjuder lägre drift- och underhållskostnader, effektivare markanvändning, minskade krav på bärighet för terminaler, förbättrad energi- och miljöprestanda samt minskade kostnader per hanterad enhet.

TFK – TransportForsK TFK rapport 2013:9 0347-0970

Stockholm, 81 s, 9,32 MB, 2013

ISBN: 978-91-85665-65-5, 91-85665-65-7

Projektnamn: SiR-C, Swedish Intermodal Transport Research Center

Index terms: Freight terminal, Fuel consumption, Energy consumption, Emission
Ämnesord: Godsterminaler, Bränsleförbrukning, Energiförbrukning, Emissioner

Intermodala terminalers interaktion i ett nätverk av hamnpendlar

Mustonen, Maria

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_002401_002500/Publikation_002474/2013_6.pdf

I denna studie har utvecklingen av olika inlandsterminaler som är knutna till Göteborgs Hamns hamnpendelnätverk Railport analyserats. Göteborgs Hamn, som är Nordens största containerhamn, har tillsammans med samarbetspartners utvecklat intermodala hamnpendlar sedan 1998. I dagsläget transporteras ca 45 % av containerflödet mellan hamnen och inlandet på järnväg. En förutsättning till denna utveckling har varit ett fungerande terminalnätverk. Studiens teoretiska utgångspunkt är konceptet torrhamn (dry port). Det innebär att en intermodal inlandsterminal är knuten till en sjönära hamn med en fast järnvägsförbindelse och godset kan lämnas och hämtas där såsom i den egentliga hamnen. I litteraturstudien diskuteras torrhamnsbegreppet och torrhamnarnas fördelar, funktioner och uppgifter. Allmänna förutsättningar för terminaletableringar samt ägarstruktur och affärsmodeller för torrhamnar gås igenom. Några exempel på torrhamnar i utlandet presenteras. Studiens metodik är kvalitativ, och primärmaterialet består av 30 intervjuer och sju studiebesök. Bland de intervjuade finns representanter från infrastrukturägare, hamnar, intermodala operatörer, terminaler och transportköpare. Genom intervjuer och studiebesök görs en allmän kartläggning av de olika hamnpendeluppläggen. Sex terminaler och tillhörande hamnpendelupplägg studeras närmare i fallstudier. De terminaler som är knutna till Railport-systemet kan indelas i fyra grupper: • Enkla omlastningsplatser, • Konventionella kombiterminaler, • Terminaler med torrhamnsprofil, • Logistikcentra. Terminalerna skiljer sig från varandra avseende teknisk standard och serviceutbud. Även hamnpendeltrafikens betydelse för olika terminaler varierar. Flera affärsmodeller finns hos de intermodala aktörer som är inblandade i aktiviteter kring torrhamnar och hamnpendlar. Om man tolkar det teoretiska torrhamnsbegreppet strängt kan man påstå att det inte finns några renodlade torrhamnar i Sverige i dagsläget. Emellertid utvecklas flera terminaler enligt konceptet, och de har kommit så nära definitionen av torrhamnar att det är befogat att kalla dem för torrhamnar.

TFK – TransportForsK TFK rapport 2013:6 0347-0970

Stockholm, 62 s, 1,66 MB, 2013

ISBN: 978-91-85665-62-4, 91-85665-62-2

Index terms: Freight terminal, Rail bound transport, Port, Railway track, Intermodal transport (freight)
Ämnesord: Godsterminaler, Järnvägstransporter, Hamnar, Järnvägar, Intermodala transporter

Exploring logistics actions enabling environmentally sustainable freight transport

Santén, Vendela

http://publications.lib.chalmers.se/records/fulltext/172690/172690.pdf

To curb unsustainable freight transport trends; such as transport growth, larger dependency on road transport and generally an increased share of greenhouse gas emissions from the sector, actions needs to be taken among actors in the logistics system. The purpose of this thesis is to explore logistics actions that enable environmentally sustainable freight transport. This explorative research, based primarily on empirical data from interviews, focus groups, and a case study, adopts the perspectives of different actors in the logistics system: transport buyers, freight forwarders, transport operators, and authorities. The thesis identifies a wide range of actions in the logistics system to potentially enable environmentally sustainable freight transport. The perception from actors regarding what actions are important to adopt indicate that more knowledge among actors regarding how transport and traffic work can be reduced and how different actions affect each other are needed; especially how transport buyers acting affect the transport operations performed by freight forwarders and transport operators. By exploring what hinders environmentally sustainable freight transport in the interface between transport buyers and providers, it can be concluded that closer co-operation can provide better internal conditions for actors and new business solutions. Open dialogue, information sharing, and proactivity among both transport buyers and transport providers are essential. Furthermore, in order to increase load factor in practice, actions can be taken by transport buyers in the area of packaging, loading, and booking efficiency. More flexible time requirements will potentially increase the load factor. Gaining positive environmental effects from these changes is dependent on the freight forwarder's actions in terms of consolidating with other transport buyers' goods, route planning, and the positioning of vehicles. Since improvements in one actor's system may not necessarily yield positive effects at a higher system level, it is important to also have a holistic view when aiming for environmentally sustainable freight transport. This thesis contributes with knowledge about how logistics actors can work toward environmentally sustainable freight transportation by providing insight for managers of transport buying and transport providing companies by exemplifying the interactions between actors and actions and their potential effects.

Chalmers University of Technology. Department of Technology Management and Economics
Licentiate thesis, Technical report. L 2013:63 1654-9732

Göteborg, 91 s, 2,21 MB, 2013

Index terms: Sustainable transport, Freight transport, Logistics, Emission, Transport mode, Choice, Transport operator
Ämnesord: Hållbara transporter, Godstransporter, Logistik, Emissioner, Transportslag, Val, Transportörer
Extra ämnesord: Transportmedelsval

Purchasing process for freight transport services and influence on CO2 emissions

Rogerson, Sara

http://publications.lib.chalmers.se/records/fulltext/172096/172096.pdf

Companies purchasing freight transport services may through the purchasing process restrict or create opportunities for how transport service providers deliver the transport service. The purpose of this thesis is to explore how the configuration of the purchasing process for freight transport services can influence the reduction of CO2 emissions. This thesis is a compilation of three papers based on empirical data, collected mainly through interviews in three multiple-case studies. The results include descriptions of the purchasing process for freight transport services. Influence of the contextual dimensions purchase task, importance, and service type on the purchasing process for freight transport is discussed, and eight different types of contexts and their implications for the configuration of the purchasing process are presented. Relationships between the purchasing process for freight transport and logistical variables, related to CO2 emissions, are identified. In particular, time requirements and information sharing are highlighted as important underlying aspects of the relationships. Different configurations of the purchasing process for freight transport services facilitate or hinder consideration of such aspects. The results lead to increased understanding of how contextual variables influence the configuration of the purchasing process. The results also contribute to theory on reducing negative effects of freight transport on the environment, by connecting practices to logistical variables that are related to CO2 emissions, combining a purchasing process model with an existing framework that depicts the relationship between logistics and environmental effects. The results can be used by companies purchasing freight transport to support discussions aiming to reduce CO2 emissions.

Chalmers University of Technology. Department of Technology Management and Economics
Licentiate thesis, report 2013:62 1654-9732

Göteborg, 76 s, 1,68 MB, 2013

Övrig info: Endast kappan. Saknar de 3 uppsatserna.

Index terms: Freight transport, Sustainable transport, Carbon dioxide, Emission, Transport mode, Choice, Transport operator
Ämnesord: Godstransporter, Hållbara transporter, Koldioxid, Emissioner, Transportslag, Val, Transportörer
Extra ämnesord: Transportmedelsval

Regional intermodal transport systems: analysis and case study in the Stockholm-Mälaren region

Kordnejad, Behzad

http://kth.diva-portal.org/smash/get/diva2:623385/FULLTEXT01.pdf

The global trend of urbanization is evident and also valid in Sweden and for the Stockholm-Mälaren region, also referred to as the Mälaren valley, a region consisting of metropolitan Stockholm and areas around the lake of Mälaren. In this context, efficient urban freight transportation has emerged as essential for sustainable development of urban areas. Geographic regions are being expanded due to the fact that rapid transport options have expanded the range of action of people and businesses. Metropolitan regions require freight transports that are often categorized by an inflow of consumables and an outflow of waste and recyclable material. Within urban areas there are ports, terminals and storage facilities that require incoming and outgoing transport. Altogether, these shipments have led to increased congestion on the road network within urban areas, which is a contributing factor to why a shift to intermodal land transports have been advocated both in Europe and in Sweden, thus encouraging more freight to be moved from road to rail. Another contributing factor is the relatively low impact on the environment generated by rail transportation. Efficient use of resources and low emissions of greenhouse gases are factors that are in favor of the train as a transport mode. Furthermore, conventional rail freight is commonly competitive on long distances and in end-point relations between two nodes. However, an intermodal liner train, as a transport system for freight differs from conventional rail freight transport systems, as it similar to a passenger train makes stops along the route for loading and unloading. Due to the stops made at intermediate stations it enables the coverage of a larger market area. For regional or inter-regional relations, the concept has the potential of reducing drayage by truck to and from intermodal terminals and to make rail freight competitive also over medium and short distances. The main aim of this thesis project has been to analyze under which conditions a combined transport system with the railway as a base can be implemented in the Stockholm-Mälaren region. Based on a case study for a shipper distributing daily consumables in the region, the feasibility of creating a regional rail freight transport system has been evaluated. This study provides a methodology for evaluating the feasibility, regarding costs and emissions, of concepts and technologies within freight transportation chains. This has been accomplished by the development of a cost modal, Intermodal Transport Cost Model (ITCM). From the results of the case study one can conclude that a regional rail based intermodal transport system regarding costs is on the threshold of feasibility in the studied region. As for emissions, all evaluated intermodal transport chains contribute to a significant decrease in CO2 emissions compared to unimodal road haulage. The loading space utilization of the train and the transshipment cost are the most critical parameters. The latter restricting the competitiveness of intermodal services to long distances as it is not proportional to transported distance but rather to the utilization rate of resources. Hence, the concept of cost-efficient small scale (CESS) terminals is introduced in this study. A main prerequisite in order to make the intermodal liner train efficient is a stable and balanced flow of goods with optimized loading space utilization along the route. As the objective is to consolidate small flows, imbalances along the route will constitute an obstacle for the liner train to be competitive. Thus regarding loading space utilization it is necessary to consolidate other freight flows in the train in order to achieve high loading space utilization and a balanced flow along the route. The third parameter which is critical for the results are the fuel prices, where a sensitivity analysis of the results shows that if diesel prices would increase so would the feasibility of the intermodal option. The same is also valid for train length increase as long as the loading space utilization is maintained.

Kungliga tekniska högskolan. Institutionen för transportvetenskap TRITA-TSC-LIC 13-005

Stockholm, 39 s, 5,46 MB, 2013

ISBN: 978-91-87353-12-3

Övrig info: Endast kappan. Saknar de 3 uppsatserna.

Index terms: Urban area, Region, Delivery, Freight transport, Rail bound transport, Intermodal transport (freight), Logistics
Ämnesord: Tätorter, Regioner, Leverans, Godstransporter, Järnvägstransporter, Intermodala transporter, Logistik

Feasibility study of the electrification of the urban goods distribution transport system

Löfstrand, Sofia; Hellgren, Jonas; Thulin, Niklas; Engdahl, Henrik; Pettersson, Stefan; Williamsson, Jon; Sandoff, Anders

http://fudinfo.trafikverket.se/fudinfoexternwebb/Pages/PublikationVisa.aspx?PublikationId=1908

EU:s vitbok för transporter har satt målet att uppnå en CO2-fri stadslogistik i större städer år 2030. Med hög energieffektivitet, låga driftskostnader, låga lokala utsläpp och minskat buller, kan elektrifiering av stadstrafiken väl vara ett kostnadseffektivt och attraktivt alternativ för alla inblandade parter. Inom ramarna för projektet har möjligheter för en elektrifiering av urbana godstransporter studerats genom en utvärdering av olika fordonstyper. Grunden för utvärderingen skapades genom ett samarbete mellan representanter för alla steg i transportkedjan. Dessutom deltog ledande forsknings- och utvärderingsinstanser vilka bidragit med relevanta forskningsresultat och input om politiska följder, informations-och kommunikationsteknik och affärsperspektiv. Studien pekar på att det kommer att finnas ekonomiska skäl att se en övergång från diesellastbilar till elektrifierade lastbilar inom tidsperioden 2015-2025. Under denna period förutspås elektrifierade lastbilar att bli kostnadseffektiva ur ett transportföretags perspektiv för ett antal distributionsupplägg. Eftersom högt utnyttjande av fordonen ses som avgörande för att etablera elektrifierade lastbilar, kan övergången till förväntas gå snabbare för andra urbana fordon med betydligt högre årlig körsträcka och/eller hög energianvändning per kilometer, t.ex. stadsbussar och sopbilar. Utvärderingen visar även att det är redan nu är tekniskt möjligt att nå EU:s mål genom en elektrifiering av fordonsflottan men kostnadsmässigt kommer elektrifierade fordon vara ekonomiskt konkurrenskraftigt i vissa applikationer först 2025. En av slutsatserna är därför att det krävs betydande stöd med lämpliga styrmedel för att kunna nå den marknadspenetration som är nödvändig för att uppnå en ”i huvudsak CO2-fri stadslogistik”. För att stödja övergången från konventionella diesellastbilar till el- och hybridlastbilar för stadsdistribution i Göteborg, finns det flera alternativ som skulle vara till nytta för transportörer. Till exempel behövs laddningsstationer som är lättillgängliga under dagtid alternativt möjlighet att ladda vid på- och avlastningsområden under distributionsuppdraget. Ytterligare ett konkret stöd är att ge elfordon undantag från trängselskatt eller tillgång till körfält dedikerade till kollektivtrafik. Intelligenta kommunikationslösningar och utveckling av nya affärsmodeller kommer att spela en viktig roll för att stödja utvecklingen och användandet av elektrifierade fordon för godsdistribution. Vidare är det nödvändigt att myndigheter på alla nivåer (lokal som nationell), på kort sikt ökar förståelsen av fördelarna samt begränsningar av elektrifierade urbana fordon och utvecklar en politik som stöder (i) de unika driftsformer fordon med nollemissioner kan erbjuda och (ii) högt fordonsutnyttjande.

Fordonsstrategisk Forskning och Innovation (FFI)

Stockholm, 2 s, 2013

Övrig info: För komplett publik rapport, se engelsk version.

Index terms: Electric vehicle, Delivery vehicle, Delivery, Urban area, Freight transport
Ämnesord: Elfordon, Varubilar, Leverans, Tätorter, Godstransporter

Quantitative assessment of intelligent transport systems for road freight transport

Mbiydzenyuy, Gideon

http://www.bth.se/fou/Forskinfo.nsf/Sok/5459173e53761bc0c1257b260056e803!OpenDocument

In this thesis, methods for using computer-based models as support tools for assessing Transport Telematic Services (TTSs) are studied. Such assessments provide one way to understand how TTSs can address problems caused by transportation, such as accidents, emissions, and energy consumption. TTSs are services based on telematic systems which are Intelligent Transport Systems (ITS) involving the integrated use of information and communication technologies in transport. The focus is on TTSs that are relevant for road freight transport, even though the suggested methods can easily be adapted for TTSs in other areas. We characterize TTSs, e.g., in terms of their functionalities, and apply computer-based modeling for pre-deployment assessment of various TTSs (from an ex-ante perspective). By analyzing information provided by the suggested computer-based models, it is possible to make an informed decision whether to (or not to) deploy a given TTS. A review of previous studies reveals information about relevant TTSs for freight transport in areas such as driver support, administration, safety, traffic management, parking, and goods handling. A hierarchical clustering algorithm and a k-minimum spanning tree algorithm were employed to analyze synergies of TTSs. Synergies can enable identification of sets of TTSs that can lead to cost savings if deployed on a common platform (cf. Multi-Service Architectures). An analytical model inspired by the net present value concept is used to estimate quantified societal benefits of TTSs. An optimization model is formulated and solved using a branch and bound method to determine an optimal combination of TTSs taking into consideration societal benefits, costs, dependencies, and synergies. The optimization model also addresses possible system architectures for achieving multiple TTSs. Dominance rough set approach is used to assess and compare benefit areas for TTSs specific to truck parking. The benefit areas are suggested with the help of conceptual modeling, which describes functional models of a system in terms of states, transitions among states, and actions performed in states. The main scientific contributions of the thesis are in suggesting new quantitative models, extending and applying existing models in the assessments of TTSs, and obtaining results that can help decision-makers select TTSs for medium-to long-term investments. Researchers can employ and build on the proposed methods when addressing different scenarios (geographic or organizational) involving similar TTSs. By studying a range of TTSs and possible Multi-Service Architecture concepts for such TTSs, the thesis contributes to achieving convergence of TTSs in a Multi-Service Architecture environment that will improve cost efficiency, minimize redundancies, and encourage the establishment of standards in the deployment of TTSs in road freight transport. TTSs implemented in such an environment can contribute to optimizing available capacity, accuracy, speed, and efficiency of road freight transport systems.

Blekinge Institute of Technology. School of Computing Blekinge Institute of Technology doctoral dissertation series 2013:6 1653-2090

Karlskrona, 214 s, 3,30 MB, 2013

ISBN: 978-91-7295-252-2

Index terms: Intelligent transport system, Parking, Driver information, Intelligent speed adaptation, Navigation (route), Lorry, Freight transport, Telematics, Value analysis
Ämnesord: Intelligenta transportsystem, Parkering, Förarinformation, Intelligent hastighetsanpassning, Navigation, Lastbilar, Godstransporter, Telematik, Värdeanalys

On the synergies between an electronic waybill and intelligent transport systems services

Bakhtyar, Shoaib

http://www.bth.se/fou/Forskinfo.nsf/Sok/f7ae7c331b5ecf29c1257bea0037cf84!OpenDocument

The main purpose of this thesis is to investigate potential synergies between an electronic waybill (e-Waybill) and other Intelligent Transport System (ITS) services. An e-Waybill service, as presented in this thesis, should be able to perform the functions of a paper waybill (which is an important transport document and contains essential information about a consignment) and it should contain at least the information specified in a paper waybill. To investigate synergies between the e-Waybill solutions and ITS services, we present 5 conceptual e-Waybill solutions that differ in where the e-Waybill information is stored, read, and written. These solutions are further investigated for functional and technical requirements (non-functional requirements), which can potentially impose constraints on a potential system that should implement the e-Waybill service. A set of 20 ITS services are considered for synergy analysis in this thesis. These services are mainly for road transport, however most of them are relevant to be considered for utilization in other modes of transport as well. For information synergy analysis, the e-Waybill solutions are assessed based on their synergies with ITS services. For different ITS services, the required input information entities are identified; and if at least one information entity can be provided by an e-Waybill at the right location we regard it to be a synergy. The result from our synergy analysis may support the choice of practical e-Waybill systems, which has the possibility to provide high synergy with ITS services. This may lead to a higher utilization of ITS services and more sustainable transport, e.g., in terms of reduced congestion and emissions. Additionally, a service design method has been proposed for supporting the process of designing new ITS services, which primarily utilizes on functional synergies with already existing ITS services. In order to illustrate the usage of the suggested method, we have applied it for designing a new ITS service, i.e., the Liability Intelligent Transport System (LITS) service. The purpose of the LITS service is to support the process of identifying when, where, and by whom a consignment has been damaged and who was responsible when the consignment was damaged.

Blekinge Institute of Technology. School of Computing Blekinge Institute of Technology licentiate dissertation series 2013:10 1650-2140

Karlskrona, 105 s, 1,56 MB, 2013

ISBN: 978-91-7295-265-2

Index terms: Freight transport, Freight, Information documentation, Intelligent transport system, Thesis
Ämnesord: Godstransporter, Gods, Information, Intelligenta transportsystem, Doktorsavhandling

Essays on operational freight transport efficiency and sustainability

Arvidsson, Niklas

http://hdl.handle.net/2077/34191

Freight transport efficiency, as one proposed abatement strategy for transport related emissions, is a concept that has received much research attention during the last decade, often from the transport buyers' perspective. In contrast, the aim of this thesis is to explore the subset concept of operational freight transport efficiency and how it affects transport related emissions from the perspective of the transport operator. The focus is on the transport operators and their interfaces with other actors such as tran-sport providers/forwarders, transport buyers, and the society. I open with a dissection of the term "operational freight transport efficiency." I make these primarily semantic efforts to open up and introduce a few aspects that are commonly overlooked. The concept is argued to be "fuzzy", in the sense that it means different things depending on who you ask, and a "wicked problem", in the sense that the problem has no clear solutions with significant and present trade-offs. The methodology, or vessel, used in this thesis to launch a "critical spirit" is "phronetic social science". After phronetically testing the efficiency measures, some recommendations are presented. A suggestion on operational decarbonisation is provided and the attitudes and trade-offs among the actors are explored. The thesis identifies a gap with respect to the absence of a common semantic definition of the concept of operational freight transport efficiency measures. The thesis proposes that the gap be filled with the following derived define-tion of operational freight transport efficiency: "A set of utilisation measures of time, space, vehicle, fuel and driver in the movement of goods". From the operators point of view, as well as from an aggregated level, also missing are the trade-offs between environmental and economic considerations. Most operational freight transport effi-ciency improvement measures are likely to reduce emissions, however; it is probable that mere cost-reduction measures will not lead to reduced emissions in the long term. The traverse across these topics represented by the present thesis is offered as a theo-retical contribution to the discussion about defining what is meant by sustainable logistics. In other words, what the word sustainable means in a logistics context

Handelshögskolan vid Göteborgs universitet

Göteborg, 17 s, 4,92 MB, 2013

ISBN: 978-91-628-8808-4

Index terms: Delivery, Freight transport, Urban area, Logistics, Efficiency, Sustainable transport, Emission, Case study, Thesis
Ämnesord: Leverans, Godstransporter, Tätorter, Logistik, Effektivitet, Hållbara transporter, Emissioner, Fallstudier, Doktorsavhandling

Freight segmentation: project report

Hagen, Andreas

http://fudinfo.trafikverket.se/fudinfoexternwebb/Pages/PublikationVisa.aspx?PublikationId=1964

A plausible strategy for reducing the freight transport-based negative influence on the physical infrastructure is to develop a more resource efficient way of prioritizing and handling of freight. By using the preferences and demands from the customers it is possible to create an opportunity to classify, or segment, the shipments according to the characteristics and demands of the goods and the current load on the transportation network, transport resources and physical infrastructure. The project involved two studies, one that explored the viability of the freight segmentation concept and one that explored the resource utilization of Logistics Service Providers. The conclusions of the project are that there is a lot of potential for improvement, but that it is not possible to implement the freight segmentation concept with the current level of information system and technological support that Logistics Service Providers have. Efforts have to be taken to improve information- and communication aspects of their operations first.

Chalmers University of Technology

Göteborg, 27 s, 2013

Index terms: Freight transport, Logistics, Efficiency, Freight
Ämnesord: Godstransporter, Logistik, Effektivitet, Gods
Extra ämnesord: Fyllnadsgrad

Godsets hela resa - analys av utvalda stråk inom Trafikverket Region Syd på väg och järnväg: sammanfattning

Johannesson, Staffan; Göthe, Lotta

https://online4.ineko.se/trafikverket

Trafikverket har regeringens uppdrag att utveckla befintliga transporter av gods på järnväg och främja överflyttning av gods till järnväg. Detta i syfte att minska bland annat CO2-utsläpp och få ett mer effektivt utnyttjande av transportsystemet. Ett led i detta är att identifiera och konkretisera hur kombitransporter underlättas. Trafikverket Region Syd har tagit fram ett planeringsunderlag för Gods med utgångspunkt från att Trafikverket har ett uppdrag att skapa förutsättningar för effektiva och långsiktigt hållbara godstransporter och bidra till att logistikområden utvecklas.; Med planeringsunderlaget som utgångspunkt har vi genomfört en studie där vi intervjuat ett antal företag som trafikerar godsstråk som har sin; start- och/eller slutpunkt i Region Syd. Dialogen har skett utifrån perspektivet ”Godsets hela resa” för att fånga och analysera kundernas; behov. Syftet har varit att identifiera åtgärder som Trafikverket Region Syd inom ramen för sitt uppdrag kan genomföra för att effektivisera och underlätta för godstransporterna i dessa utpekade godsstråk. Fokus är på åtgärder som kan påverka behovet av transporter, valet av transportsätt samt ett mer effektivt utnyttjande av befintlig infrastruktur. Arbetet har resulterat i en bruttolista på åtgärdsförslag som nu ska bearbetas, värderas och prioriteras av Trafikverket Region Syd.

Trafikverket Publikation 2013:058

Borlänge, 18 s, 2013

ISBN: 978-91-7467-474-3

Index terms: Freight transport, Efficiency, Improvement, Increase, Corridor (transp), Transport operator, Interview
Ämnesord: Godstransporter, Effektivitet, Förbättring, Ökning, Transportkorridorer, Transportörer, Intervjuer

Samlade laster: nyckelfaktorer för framgångsrik samordning av godstransporter

Udin, Christian; Stjärnekull, Michael; Troeng, Ulf

http://webbutik.skl.se/bilder/artiklar/pdf/7164-970-6.pdf?issuusl=ignore

Godstransporter är en förutsättning för att samhället ska fungera. Samtidigt medför transporterna negativa konsekvenser som utsläpp, buller, minskad framkomlighet och trafiksäkerhetsrisker. Effektivisering av godstransporterna behövs för att minska den negativa påverkan på livsmiljön men också för att underlätta näringslivets varuförsörjning. Detta är viktigt för att öka attraktiviteten i en kommun. Den här boken ger exempel på samlastning och samordnad varudistribution i Sverige och Europa. Utifrån dessa exempel lyfts det sedan fram ett antal nyckelfaktorer för ett framgångsrikt arbete med samlastning.

Sveriges kommuner och landsting

Stockholm, 84 s, 2013

ISBN: 978-91-7164-970-6

Index terms: Freight transport, Urban area, Logistics, Case study, Delivery
Ämnesord: Godstransporter, Tätorter, Logistik, Fallstudier, Leverans
Extra ämnesord: Citylogistik, Samdistribution

Uppföljning av åkerier i tiden: dagsläget för åkeriers arbete med energieffektivare och kostnadsbesparande åtgärder

Nilsson, Charlotta; Skogens, Elin; Hansson, Pernilla

https://online4.ineko.se/online/download.aspx?id=43964

De tunga transporterna i Sverige svarar för en betydande del av den totala drivmedelsförbrukningen och därmed utsläppen av växthusgasen koldioxid. Möjligheterna att minska förbrukningen och utsläppen är stora, i potten ligger också en starkare ekonomisk situation för en bransch som idag visar en ganska dålig lönsamhet.

Trafikverket Publikation 2013:132

Borlänge, 34 s, 1,11 MB, 2013

Index terms: Freight transport, Lorry, Energy conservation, Fuel consumption, Carbon dioxide, Follow up study, Interview, Transport operator
Ämnesord: Godstransporter, Lastbilar, Energihushållning, Bränsleförbrukning, Koldioxid, Uppföljningsstudier, Intervjuer, Transportörer

Gröna korridorer för godstransporter - en vision på väg mot verklighet: slutrapport

Berger, Anders; Niklasson, Helene; Johnson, Anders; Engström, Rikard

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001901_002000/Publikation_001913/2009-01600_publikrapport_SV.pdf

Sveriges konkurrenskraft och ekonomiska utveckling beror till stort på ett effektivt och välfungerande logistik- och transportsystem. Rörlighet av människor och gods till, från och inom landet måste vara kostnadseffektiv och på samma gång säker och miljömässigt hållbar. Oavsett vilka åtgärdsscenarier som väljs för att möta det ökande behovet av transporter är det uppenbart att vägtransporter kommer ta upp den största delen av ökningen. Som ett av svaren på dessa samhälls- och miljöutmaningar har ”gröna transportkorridorer” presenterats. Konceptet gröna transportkorridorer fokuserar på långväga godstransporter och innebär bland annat att koncentrera godstrafik till gemensamma flöden mellan större hubbar. Tanken är att dessa transportkorridorer kommer främja sam-modalitet och användning av avancerad teknologi för att på så sätt tillgodose ökande trafikvolymer och samtidigt möjliggöra miljömässigt hållbara och energieffektiva transporter.; Projektet ”Gröna Korridorer för Godstransporter på Väg” har haft som mål är att ta fram en operationaliserbar definition och utveckla en kunskapsplattform samt beskriva forsknings- och utvecklingsbehov inom område. Vidare har syftet varit att bygga nätverk i syfte att genom att underlätta samordning, kommunikation och spridning av resultat och erfarenheter mellan projekt och till relevanta intressenter.

Fordonsstrategisk Forskning och Innovation (FFI)

Stockholm, 41 s, 1,45 MB, 2013

Index terms: Freight transport, Road transport, Sustainable transport, Corridor (transp), Research project
Ämnesord: Godstransporter, Vägtransporter, Hållbara transporter, Transportkorridorer, Forskningsprojekt

Energieffektiva stationsområden

Ållebrand, Björn

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001901_002000/Publikation_001919/Slutrapport%20Energieffektiva%20stationsomr%c3%a5den%20komplett%20med%20omslag.pdf

Projektet Energieffektiva stationsområden´, som delvis ingått inom ramen för ”Nytt Ljus” är ett projekt för energieffektivisering med fokus på att undersöka besparingspotentialen för växelvärme, teknikhus och bangårdsbelysning. I denna slutrapport presenteras syftet, mål, ekonomin och resultat.; Projektets viktigaste resultat är att den tidigare teoretiskt beräknade energibesparingen som den nya växelvärmestyrningen förväntas ge har visat sig överensstämma med faktiskt uppmätta värden. Resultaten visar att byte till den nya styrningen av växelvärmen kan ge en energibesparing på 50 %. Applicerat på hela landet kan detta ge en energibesparing på 74 GWh per år om det antas att 75 % av befintliga växelvärmestyrningar idag är förbikopplade på grund av osäkerhet på funktionen. Detta motsvarar en årlig besparing på ca 74 mkr.; För bangårdsbelysningen har traditionell högtrycksnatrium 250 W jämförts med ny LED-belysning av olika fabrikat och även med vidareutvecklad högtrycksnatrium med längre livslängd. Även central dimmerutrustning för högtrycksnatrium har testats. Slutsatsen är att för bangårdsbelysning bör Trafikverket vänta med ny LED-belysning tills det finns ett stabilt standardiserat sortiment och enhälliga kvalitetskrav på LED armaturer.; Olika plattformsbelysningar har testats och det framkom att lysrör med lång livslängd var den bästa att använda.; För teknikhus har frikyla testats vilket medför lägre energikostnader och en bättre arbetsmiljö för underhållspersonalen.; Rapporten beskriver även förändrade förutsättningar för personalen samt samarbetsparters för projektet.; Resultatet i denna slutrapport skall vara vägledande i arbetet för energieffektivare stationsområden

Fordonsstrategisk Forskning och Innovation (FFI)

Stockholm, 33 s + bil (ca 28 s), 3,79 MB, 2013

Index terms: Energy consumption, Energy conservation, Marshalling yard
Ämnesord: Energiförbrukning, Energihushållning, Bangårdar
Extra ämnesord: Belysning

Energieffektiva fordonskombinationer – DuoTrailer STEG1

Berger, Anders

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001901_002000/Publikation_001922/2009-00283_publikrapport_SV.pdf

Godstransporter i Europa förväntas öka med mer än 50 % fram till år 2020, jämfört med år 2000. För att miljömässigt hantera detta krävs effektiviseringar i transportsystemen. En sådan effektivisering är bland annat att genom att öka mängden gods per fordon minska bränsleförbrukningen räknat per transporterad godsmängd. Projektet Energieffektiva fordonskombinationer undersöker just den möjligheten.; Det första steget av projektet, Energieffektiva fordonskombinationer – DuoTrailer STEG1, innefattade en förstudie i vilken förutsättningarna för och den ekonomiska och miljömässiga potentialen hos längre fordon undersöktes och kartlades. Resultatet av denna förstudie var att förutsättningarna för att framföra längre fordonskombinationer på större vägar och mellan godsterminaler är goda samt att både transport- och kostnadseffektiviteten skulle kunna öka med mellan 10 och 15 % vardera.; Under efterkommande steg kommer DuoTrailer-projektet slås samman och drivas gemensamt med MaxiCube-projektet, dnr. 2009-01173, för att på ett effektivt sätt skapa en bredare kunskapsbas kring längre fordon i blandgodstransport. Detta sammanslagna projekt går under namnet Duo och kommer att innefatta färdigställande av testfordon samt fältprover och utvärdering.

Fordonsstrategisk Forskning och Innovation (FFI)

Vinnova, 10 s, 350,26 kB, 2013

Index terms: Lorry, Semi trailer, Dimension, Weight, Length, Vehicle stability, Vehicle handling
Ämnesord: Lastbilar, Påhängsvagnar, Dimension, Vikt, Längd, Fordonsstabilitet, Köregenskaper

The role of contractual and non-contractual relations between transport buyers and providers, in an environmental context

Mellin, Anna; Sorkina, Edith

http://www.transportportal.se/swopec/CTS2013-5.pdf

The aim of this paper is to describe the relationship between transport buying companies and carriers, with a focus on the transport contracts in Sweden for land based transports. Based on the aim of this study, the following research questions have been defined: How can contracts be categorized? What is the average duration and flexibility of the transport contracts to external changes? and Which environmental related elements are commonly regulated in the contracts? Based on a literature review and interviews with people on strategic positions in the transport industry, we have conducted a web-survey. In addition to contractual agreements the survey also tried to capture the relation on environmental issues, as well as the experienced logistics performance over time. Results from the survey indicates that the suggested contract categorisation from the literature was not well known by the respondents, the average duration of contracts was 1-2 years and the majority of contracts includes a fuel clause, but not many environmental requirements. Further, the analysis indicates that companies with long term contracts set environmental requirements to a larger extend and that there is a positive significant relation between the companies' environmental work with in the transport operation and their perception of an improved logistics performance, both in terms of quality and cost.

Centre for Transport Studies Stockholm Working papers in Transport Economics 2013:5

VTI

KTH Royal Institute of Technology

S-WoPEc, Scandinavian Working Papers in Economics

Stockholm, 28 s, 413,58 kB, 2013

Index terms: Freight transport, Transport operator, Contract, Environment protection, Policy, Enterprise
Ämnesord: Godstransporter, Transportörer, Avtal, Miljöskydd, Policy, Företag

Frivilliga klimatåtgärder på den svenska godstransportmarknaden: en intervjustudie

Mellin, Anna; Pyddoke, Roger

http://www.vti.se/sv/publikationer/pdf/frivilliga-klimatatgarder-pa-den-svenska-godstransportmarknaden--en-intervjustudie.pdf

Denna intervjustudie frågar både köpare och utförare av godstransporter efter åtgärder för att minska utsläpp av klimatgaser, åtgärdernas kostnader och effekter. De intervjuade företagen har valts bland företag med uttalade klimatstrategier. Resultaten visar att företagen genomför flera frivilliga klimatåtgärder, men är att företagens egna uppgifter är otillräckliga för att bedöma om de tar på sig betydande kostnader för att nå minskningar. Informationen räcker inte heller för att bedöma om effekten av åtgärderna leder till betydande minskningar jämfört med företag utan uttalade klimatstrategier. Vi drar slutsatsen att en mer konkret och trovärdig kommunikation av företagens klimatåtgärder kanske skulle kunna öka transportköparnas vilja att betala mer för mindre klimatbelastande transporter.

VTI rapport 778 0347-6030

Linköping, 20 s, 746,97 kB, 2013

Index terms: Transport operator, Enterprise, Greenhouse gas, Environment protection, Policy, Method, Freight transport, Road transport
Ämnesord: Transportörer, Företag, Växthusgaser, Miljöskydd, Policy, Metoder, Godstransporter, Vägtransporter

Genomförda utredningar och försök med längre och tyngre tåg i Sverige

Hedström, Ragnar

http://www.vti.se/sv/publikationer/pdf/genomforda-utredningar-och-forsok-med-langre-och-tyngre-tag-i-sverige.pdf

Det svenska järnvägsnätet började byggas upp i mitten av 1800-talet och under årens lopp har en kontinuerlig utbyggnad skett vilket resulterat i en infrastruktur med varierande egenskaper och kvalitet. Under årens lopp har kraven på effektivare järnvägstransporter ökat och i dag gäller andra förutsättningar, bland annat med avseende på axellaster och tåglängder, än vad som tidigare var fallet. Syftet med denna rapport är att redovisa genomförda studier i Sverige och försök för att köra längre tåg respektive tyngre tåg sedan början på 1990-talet. Materialet till rapporten bygger på utredningar som genomförts av Banverket (numera Trafikverket) i samarbete med bland andra SJ Gods (numera Green Cargo), Jernbaneverket, MTAB/LKAB, Ovako, Länsstyrelserna Gävleborg och Dalarna, SSAB. Kompletterande information har inhämtats via muntliga intervjuer med personer från Trafikverket som tidigare arbetade i Banverket. Utifrån det material som redovisas i föreliggande rapport kan följande slutsatser lyftasfram inför fortsatt utvecklingsarbete med tunga respektive långa tåg:; • Det har genomförts ett mycket begränsat antal konkreta försök i Sverige och utredningar med avseende på tunga respektive långa tåg. Det underlagsmaterial som varit möjligt att få fram inom ramen för detta projekt beskriver försök/utredningar genomförda sedan början av 1990-talet.; • När det gäller trafik med tyngre tåg är bankroppens och broarnas bärighet en begränsande faktor för trafik med höga axellaster (t.ex. stax 25 ton) och största tillåtna vagnvikt per meter (stvm) motsvarande 8 ton/meter eller mer. I avvaktan på uppgradering av spår och broar kan begränsningarna hanteras genom hastighetsnedsättning på de banavsnitt där bärigheten är försvagad.; • Begränsningarna för långa tåg är i huvudsak kopplad till längden på och antalet mötesspår som krävs för att trafikera med till exempel 750 meter långa tåg eller längre. Spårlängden på rangerbangårdarna är också en faktor som begränsar möjligheten att sätta samman och upplösa långa tåg.

VTI notat 13-2013

Linköping, 31 s, 232,56 kB, 2013

Index terms: Train, Freight train, Length, Axle load, Weight, Increase, Limit, Railway network, Load carrying capacity
Ämnesord: Tåg, Godståg, Längd, Axeltryck, Vikt, Ökning, Gränsvärden, Järnvägsnät, Belastningskapacitet

Intermodal container transport logistics to and from Malaysian ports: evaluation of customer requirements and environmental effects

Nasir, Sharin

http://kth.diva-portal.org/smash/record.jsf?pid=diva2%3A781452&dswid=new

Malaysian ports' container volumes are expected to increase to 36.6 million TEUs in 2020 compare to 12 million TEUs in 2005. Almost 45% of the container volumes are local containers entering the Malaysian hinterland. The hinterland container transport movements are dominated by road haulage (90%), alongside road-rail intermodal that currently handles the remaining 10%. The aim of this research is to develop possible strategies for improving the logistics of the intermodal hinterland container transport system based on customer demand, cost-efficiency, environmental impacts and quality. Intermodal began to capture more container volumes from ports, especially Port Klang, in 1989. This was initiated by the opening of Ipoh Cargo Terminal (ICT). Other inland terminals such as Padang Besar (Perlis), Nilai Inland Port (Negeri Sembilan), Segamat Inland Port (Johore) and three other ICDs have seen a good share of intermodal movements during that time. But for the past 10 years, the intermodal share has declined. The government is concerned with the congestion, greenhouse gas (GHG) emissions from road haulage and security issues. The Prime Minister has pledged that by the year 2020, Malaysia will reduce its CO2 emissions by 40% and it is believed that intermodal could be one of the solutions to achieve this. The need to shift from road haulage to road-rail intermodal has been mentioned in Industrial Master Plan 3 (2006) and the Logistics Road Map (2009) to alleviate these problems. Intermodal hinterland container transport is a trend in many European ports to solve road haulage problems. The current hinterland container transport in Malaysia showed that the share of intermodal in Malaysia is still low. Most of the inland terminals in Malaysia are underutilised. Based on a customer survey, the major issues for customers to shift to intermodal is not only cost but also service quality. The lack of strategic policies and effective institutional aspects also contributes to make intermodal services less attractive. The Port Klang-Ipoh Corridor has a huge potential to be the main intermodal corridor in Malaysia. The case study showed that this corridor has the container volume to support intermodal services. The case study indicated a cost saving of 51% compared to direct road haulage, whereby CO2 emissions would be reduced by 36%. However, all the cost savings and reductions in CO2 emissions are not viable if there is no implementation of the most effective strategies to promote intermodal movement. The strategies include 1) introducing the Intermodal Transport Department and new policies, 2) introducing specific intermodal services, 3) setting up the green corridor concept, 4) developing a reward system for actors in intermodal transportation, 5) collaboration and coordination issues and 6) quality of service monitoring.

Kungliga tekniska högskolan. Skolan för arkitektur och samhällsbyggnad, Transportvetenskap, Väg- och banteknik TRITA-TSC-PHD 14-010

Stockholm, 182 s, 4,59 MB, 2014

ISBN: 978-91-87353-62-8

Index terms: Intermodal transport (freight), Logistics, Freight terminal, Port, Feeder transport, Malaysia, Thesis
Ämnesord: Intermodala transporter, Logistik, Godsterminaler, Hamnar, Matartrafik, Malaysia, Doktorsavhandling

Biosun: transport technology for sustainable intermodal transports of biofuel

Falkenberg, Andrée

http://www.mariterm.se/download/rapporter/biosun.pdf

En av mänsklighetens största utmaningar genom tiderna är att lösa den växande klimatkrisen, vilken är en konsekvens av vår omfattande förbränning av fossila bränslen. Om vi misslyckas med att vända den negativa trenden kan irreversibla skador uppstå, vilket kan få oöverblickbara konsekvenser i framtiden. Med dessa utmaningar i åtanke är energiomställningen från fossila bränslen till förnyelsebara energikällor en viktig förutsättning. Ett steg i rätt riktning är att använda biobränsle för energiutvinning, eftersom dessa inte bidrar till en ökning av växthusgaserna. Denna rapport har fokuserat på användbara teknologier som finns tillgängliga för intermodala transporter av sådana produkter, då transportbranschen står för en stor andel av de totala utsläppen av koldioxid. Denna studie har visat att det finns många tillgängliga koncept för intermodala transporter av biobränslen. Några av dessa är utvecklade för rena bulktransporter medan andra kan användas för flera godstyper. Det som utmärker lastbärare som är avsedda för bulklaster med låg densitet, såsom flis, är att de normalt har en högre volymkapacitet än generella lastbärare. Problemet är att de kan bli svåra att använda i intermodala flöden eftersom de är optimerade för antingen väg eller järnväg. Mot bakgrund av dålig harmonisering utav maximal höjd och bredd för väg? och järnvägsinfrastrukturen finns det en risk att optimerade lastbärare blir icke?kompatibla i intermodala nätverk.

MariTerm AB

Höganäs, 159 s, 2014

Index terms: Biomass, Intermodal transport (freight), Container (freight), Trailer, Semi trailer, Railway wagon (freight)
Ämnesord: Biomassa, Intermodala transporter, Containrar, Släpvagnar, Påhängsvagnar, Godsvagnar

Coordination and routing for fuel-efficient heavy-duty vehicle platoon formation

Liang, Kuo-Yun

http://kth.diva-portal.org/smash/get/diva2:706818/FULLTEXT01.pdf

Heavy-duty vehicle (HDV) manufacturers and fleet owners are facing great challenges for a maintained sustainable transport system as the demand for road freight transport is continuously increasing. HDV platooning is one potential solution topartially mitigate the environmental impacts as well as to reduce the fuel consumption, improve safety, and increase the throughput on congested highways. Although the concept of vehicle platooning has existed for decades, it has only been recently possible to implement in practice. Advancement in information and communications technology as well as in on-board technology allow the vehicles to connect with each other and the infrastructure. As goods have different origins, destinations, and time restrictions, it is not evident how the HDVs can fully utilize the platooning benefits during transport missions. There is a need to systematically coordinate scattered vehicles on the road network to form platoons in order to maximize the benefits of platooning. This thesis presents a framework for the coordination of HDV platoon formations. The focus lies on analyzing and validating the possibility to form platoons through fuel-efficient coordination decisions. A functional architecture for goods transport is presented, which divides the overall complex transport system into manageable layers. A vehicle model is developed to compute the impact a coordination decision has on the fuel cost. Platoon coordination consists of rerouting vehicles, adjusting departure times, and adjusting speed profiles. The focus in this thesis is on adjusting vehicles' speeds through catch-up coordination. The first main contribution of the thesis is the investigation of how and when a pair of vehicles should form platoons given their position, speed, and destination. We derive a break-even ratio where the fuel cost of catching up and platooning is equal to the fuel cost of maintaining the original profile. By comparing the distance to destination and the distance to the candidate vehicle ahead with the break-even ratio, we can conclude whether a catch-up coordination would be beneficial or not. We also show that the road topography has little or no impact on the fuel savings of catch-up coordination. The second contribution is the study of extending the catch-up coordination into a road network with scattered vehicles with the possibility to form platoons and plan routes on junctions. Incoming vehicles on a road junction are aware of other incoming vehicles and of their position, speed, and destination. The vehicles can decide if a platoon should be formed and which path to take. Simulations on the German road network show fuel savings exceeding 5% with a few thousand vehicles. For our third contribution, we use real vehicle probe data obtained from a fleet management system to investigate how catch-up coordination and departure time adjustments can increase the fuel savings from today's spontaneous platooning. The results show that coordination can increase the fuel savings and the platooning rate significantly. We managed to increase it with a factor of nine despite having only 200–350 active HDVs on the network. The main results of the thesis indicate that it is possible to increase fuel savings noticeably with simple regional coordination schemes for vehicle platoons.

Kungliga tekniska högskolan. Skolan för elektro- och systemteknik TRITA-EE 2014:013 1653-5146

Stockholm, 109 s, 7,93 MB, 2014

ISBN: 978-91-7595-067-9

Projektnamn: FFI

Index terms: Platooning (electronic), Lorry, Fuel consumption, Route (itinerary), Mathematical model, Calculation
Ämnesord: Kolonnkörning (elektronisk), Lastbilar, Bränsleförbrukning, Rutter, Matematiska modeller, Beräkning

Intelligent goods: characteristics and architectures

Jevinger, Åse

http://www.bth.se/fou/Forskinfo.nsf/17e96a0dab8ab6a1c1257457004d59ab/e89181ae53d54cb7c1257d270038b154/$file/Study%20on%20quantitative%20freight.pdf

The transports of goods are continuously increasing in many regions, for instance within Europe. Often goods travel through many different countries, using several transport modes and involving a number of different actors. As a result, the traffic load on the transport network is increasing, on the roads in particular, and the logistics chains become more and more complex. Implementing some level of intelligence on the goods, which provide them with the capabilities to assist in the logistical activities, is one of the instruments that can be used to make transports and the handling of goods more efficient and controllable. The concept of intelligent goods both opens up for new types of services and may be used to improve currently available services. Our research is mainly focused on the characteristics and possible architectures of intelligent goods systems. In this context, an intelligent goods system refers to a number of interacting components (on-board units (OBU), back-office, RFID tags, etc.), including intelligent goods, which together provide services. The architecture studies are focused on which information and data processing are needed, where they should be stored and which communication links are required. By identifying architectures corresponding to different service solutions, intelligent goods can be valued against other types of solutions, for instance more centralized configurations. In particular, different situations and services put different requirements on a system and the benefits of using intelligent goods vary. We present a framework which can be used to describe intelligent goods systems, including the capabilities of the goods, necessary information entities related to the goods as well as the surrounding entities, primitive functions and the environment around the goods. Additionally, we identify a number of primitive, potential intelligent goods level services which can be used as building blocks when creating more advanced intelligent goods services. The functional and information requirements of these services are also investigated. Based on these findings, a new approach for how to identify and evaluate different architectural solutions for potential intelligent goods services is suggested. Furthermore, a new service description framework is proposed, which can be used to, amongst others, define a service and to perform composition/decomposition analyses. Finally, an investigation of how agent technology can be used to model intelligent goods systems is also presented.

Blekinge Institute of Technology. School of Computing Blekinge Institute of Technology licentiate dissertation series 2012:08 1650-2140

Karlskrona, 129 s, 1,03 MB, 2014

ISBN: 978-91-7295-238-6

Logistics service providers going green: a framework for developing green service offerings

Isaksson, Karin

http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-106783

Environmental impact has increasingly become a “buzzword” and an important topic. This topic has been integrated into the agenda of many companies worldwide, and this dissertation focuses on the transportation and logistics industry. Environmental concerns have gained increased attention among many logistic service providers (LSPs) due to the environmental impact from their operations, and they have been identified of having a significant role in reducing the environmental burden in the supply chain. An environmental approach of the LSPs’ business has also been identified as a way to achieve competitive advantage and provide market opportunities where the development and marketing of new products and services associated with green issues are suggested as important aspects for future growth. However, considering the scarcity of research regarding this topic, a study that reveals potential aspects in the development of green service offerings can bridge the knowledge gap and provide opportunities for further research within this field. The purpose of this dissertation is therefore to develop and explain a framework for LSPs’ development of green service offerings. The purpose is addressed by first investigating LSPs’ service development from a general perspective in order to, in a second stage, reach a better understanding of the implications when integrating green aspects in LSPs’ service development efforts. Theoretically, this dissertation departed from service marketing literature or more specifically new service development (NSD) research. This resulted in a conceptual framework including key dimensions and aspects regarding a company’s NSD efforts and activities. From this foundation, the theoretical framework was developed further based on research regarding LSPs’ service development and innovation management. Finally the framework was extended with green logistics literature as well as research regarding LSPs’ green development and influences on their service offerings. Empirically, this research is mainly based on qualitative data from an in-depth case study on a large LSP active on the Swedish market. In addition, empirical data from a multiple case study and a questionnaire survey conducted for the Licentiate thesis were used in order to enrich the analysis regarding the LSPs’ development of green service offerings. The analysis followed a stepwise approach where literature and empirical data were analysed. One of the main results in this dissertation is the framework for LSPs’ new service development, consisting of five dimensions: NSD culture, NSD strategy, NSD process focus, IT use and expertise and NSD knowledge and skills. The NSD framework presents a holistic view of the LSPs’ NSD efforts by revealing different dimensions, their roles and relations to each other as well as the pre-requisites to take into consideration in the development of new services. Thus, the different NSD dimensions should not solely be viewed as isolated dimensions; instead, there is a need for LSPs to have a holistic view and understanding of the NSD activities’ reciprocity. Another main result concerns the adaption of the NSD framework to green service development. The results reveal some pre-requisites relevant for LSPs to consider in their efforts to develop green service offerings and are summarised in the following main dimensions: - Creating green awareness in the NSD culture – encourage participation regarding green initiatives within the organisation, defining a “common picture” in order to facilitate collaboration efforts and knowledge exchange concerning green expertise. The support from top management was also identified of having an influencing impact. Defining the strategic approach of green service offerings – integrate a green concern in the overall business strategy and to define the strategic role and incentives for developing green service offerings. The results also suggest LSPs to adapt green NSD efforts to different business contexts and market possibilities to match existing resources and skills with customers’ green requirements, and to perform a segmentation of customers’ environmental work

and ambitions to increase the understanding of customers' green attitudes and requirements. - Create processes and routines to facilitate spreading of green knowledge – highlights the relevance of a process focus for spreading green knowledge both from an external and internal perspective. It involves e.g. adoption of certifications, procedures for environmental calculations and documentation as well as routines to spread and integrate green knowledge among employees as well as identification of customers' green requirements. - Improve green internal knowledge and build green collaborations – provide training and education to increase the level of green awareness and knowledge among employees as well as customers and strive for collaboration efforts both internally and externally to utilise each other's knowledge and resources towards the development of green service offerings. - Increase transparency of green information both internally and externally – improve green information transparency to build both internal and external trust and increase possibilities to effectively use other actors' knowledge and resources to develop environmental improvements in the supply chain.

Integration of IT expertise and synchronisations of IT systems to facilitate and support environmental work and development of green service offerings.

Linköping university. Department of Management and Engineering Linköping Studies in Management and Economics. Dissertations 1600 0347-8920

Linköping, 351 s, 9,31 MB, 2014

ISBN: 978-91-7519-315-1

Index terms: Sustainable transport, Freight transport, Market, Demand (econ), Choice, Transport operator, Enterprise, Interview, Thesis
Ämnesord: Hållbara transporter, Godstransporter, Marknad, Efterfrågan, Val, Transportörer, Företag, Intervjuer, Doktorsavhandling

Towards greener supply chains: inclusion of environmental activities in relationships between logistics service providers and shippers

Martinsen, Uni

http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-102564

Många företag känner av pressen av agera för att minska sin miljöpåverkan. Flera företag har också insett att ett sådant agerande även har affärsmässiga fördelar. När det gäller miljöpåverkan så tillhör logistikföretagen, till stor del på grund av sina transporter, de företag som insett att något måste göras. Möjligheten för dessa företag att göra olika miljöåtgärder påverkas av varuägarna som köper logistikföretagens tjänster. Som en följd av detta blir länken mellan dessa företag – relationen – viktig för att möjliggöra förbättringar när det gäller påverkan från logistiken. Denna avhandling har som syfte att beskriva och förklara hur aktörer i försörjningskedjan, med ett speciellt fokus på relationer mellan logistikföretag och varuägare, kan inkludera miljöåtgärder i sina relationer med varandra. För att över huvud taget kunna diskutera miljöåtgärder i relationer mellan logistikföretag och varuägare så är det viktigt att veta vad för typer av miljöåtgärder detta kan röra sig om. Första forskningsfrågan i avhandlingen behandlar detta och i avhandlingen identifieras ett antal sådana åtgärder. Det kan röra sig om relativt tekniska åtgärder så som alternativa bränslen, olika typer av fordon och energieffektiv körning, till åtgärder som handlar om styrning av logistiken, så som design av logistiksystemen, till åtgärder som är väldigt relationsspecifika som exempelvis specifika projekt eller miljögrupper. Med avstamp i de identifierade åtgärderna analyseras sedan relationerna mellan logistikföretag och varuägare i några olika steg. En jämförelse mellan logistikföretagens och varuägarnas perspektiv på de miljöåtgärder som erbjuds, efterfrågas samt ingår i relationerna dem emellan visar att logistikföretagen ofta kan tillgodose sina kunders önskemål. Samtidigt som detta visar att varuägarnas önskemål verkar vara uppfyllda, så finns det en frustration från varuägarnas sida över att logistikföretagen inte är mer proaktiva. En av anledningarna till detta kan vara maktbalansen mellan logistikföretag och varuägare. Resultaten i avhandlingen pekar nämligen på att varuägarna oftast har makten över logistikföretagen, vilket verkar leda till att varuägarens ambitioner gällande miljö ofta är det som sätter agendan för vilka miljöåtgärder som inkluderas i relationen mellan dessa företag. Vidare så kan de miljöåtgärder som ingår i en relation mellan logistikföretag och varuägare koordineras på olika sätt och flera sådana tas upp i avhandlingen. Resultaten pekar även på att maktbalansen i relationerna påverkar i vilken grad miljöåtgärder inkluderas i relationer mellan logistikföretag och varuägare samt hur dessa koordineras. En matris, som bygger på logistikföretagets och varuägarens ambitioner gällande miljö för en specifik relation, sammanfattar resultaten i avhandlingen. Beroende på om denna ambition är hög eller låg för de båda aktörerna påverkar i sin tur möjligheten för varje typ av relation att arbeta mot gröna försörjningskedjor.

Linköping university. Department of Management and Engineering Linköping Studies in Science and Technology. Dissertations 1565 0345-7524

Linköping, 252 s, 2,28 MB, 2014

ISBN: 978-91-7519-440-0

Index terms: Sustainable transport, Freight transport, Market, Choice, Demand (econ), Transport operator, Enterprise, Thesis
Ämnesord: Hållbara transporter, Godstransporter, Marknad, Val, Efterfrågan, Transportörer, Företag, Doktorsavhandling

Systemeffekter av införande av HCT på väg: befintlig kunskap och intressenters inställning

Adell, Emeli; Ljungberg, Caroline; Börefelt, Alexander; Smidfelt Rosqvist, Lena

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_002401_002500/Publikation_002460/Systemeffekter%20av%20HCT_slutversion.pdf

Debatten kring ett införande av HCT (High Capacity Transport) går het både i Sverige och runt om i Europa. En av de punkter som det diskuteras mycket kring är vilka effekter en sådan reform skulle få på trafiksystemet som helhet, dvs. vilka systemeffekter en sådan förändring skulle föra med sig. En av de känsligaste frågorna är om att HCT skulle flytta gods från järnväg till väg. Om detta är en riktig bild eller inte finns det många åsikter om. Både bland olika delar av industrin, bland politiker och bland olika forskargrupper - nationellt och internationellt. Denna studie syftar till att sammanställa den dokumenterade kunskap som finns kring systemeffekter av ett införande av HCT på väg, samt att beskriva olika intressenters inställning till ett införande på väg, inklusive vad denna inställning grundas på. Studien behandlar systemeffekterna av ett införande av HCT, d.v.s. effekter på trafiksystemet på grund av införande av HCT. Fokus ligger på överflyttningseffekter. Med HCT menar vi i denna rapport ekipage som är tyngre och/eller längre än det som är tillåtet idag. Studien inkluderar alla olika typer av HCT på väg, och begränsar sig därmed inte enbart till den förändring som i dagsläget är aktuellt i Sverige (vikthöjning från 60 ton till 74 ton). Eftersom de flesta europeiska länder idag tillåter 40 ton och 18,75 meter, är detta utgångspunkten för mycket av den europeiska litteraturen som ingår i litteraturstudien. Detta bör hållas i minnet vid tolkning av resultaten. Projektet har utförts i två delstudier: 1. Systemeffekter av ett införande av HCT på väg – en sammanställning av befintlig kunskap (litteraturstudie). 2. Intressenters inställning till införande av HCT på väg – en intervjustudie.

Trivector Traffic Trivector rapport: 2014:47

Lund, 98 s, 1,87 MB, 2014

Index terms: Lorry, Weight, Length, Dimension, Impact study, Freight transport, Road transport, Rail bound transport, Change
Ämnesord: Lastbilar, Vikt, Längd, Dimension, Effektstudier, Godstransporter, Vägtransporter, Järnvägstransporter, Förändring

Landbaserade godstransporter, klimat och styrmedel: sammanfattande rapport

Mandell, Svante; Carlén, Björn

http://vti.diva-portal.org/smash/get/diva2:761685/FULLTEXT01.pdf

I denna rapport diskuterar vi flera dimensioner av hur växthusgaserna från godstransportsektorn ska kunna minskas. Till exempel diskuterar vi införandet av så kallade Gröna korridorer och förslår verktyg för att lösa de komplexa koordinationsproblem som uppstår i dessa korridorer. Vidare diskuterar vi hur man ska se på de klimatpolitiska konsekvenserna av överflyttning från väg till järnväg eller elektrifierade fordon på väg. Vi visar att konsekvenserna av en sådan överflyttning beror på den energi- och klimatpolitiska kontexten. En stor del av rapporten fokuserar på hur godstransportsektorn kan tänkas svara på ekonomiska klimatstyrmedel. Godstransportmarknaden uppvisar en rad specifika egenskaper och förhållanden som skulle kunna innebära att den reagerar annorlunda än vad andra typer av marknader gör.

VTI rapport 831 0347-6030

Linköping, 61 s, 1,42 MB, 2014

Index terms: Freight transport, Greenhouse gas, Carbon dioxide, Emission control, Policy, Method, Tax, External effect, Environment protection, EU, Sweden
Ämnesord: Godstransporter, Växthusgaser, Koldioxid, Emissionskontroll, Policy, Metoder, Skatter, Externa effekter, Miljöskydd, EU, Sverige

On the incentives to shift to low-carbon freight transport

Eng Larsson, Fredrik

http://www.lu.se/lup/publication/4648290

The transport sector accounts for approximately 20% of EU-27 greenhouse gas (GHG) emissions, and 27% of U.S. GHG emissions. With the Kyoto Protocol, Sweden and several other nations have agreed to reduce these emissions. Often, solutions that involve consolidating freight and moving it to more carbon-efficient transport technologies are advocated as the most advantageous. For such initiatives the technology already exists, so change is only a matter of implementation. But when aggregate data is examined, very little change for the better is seen. This thesis explores why this may be the case, with the purpose being to increase the understanding of the incentives to shift to low-carbon freight transport. This is explored in a three-phase research structure where, first, macro-data is analyzed, after which theory is built using two multiple case studies, which serve as input to three mathematical modeling studies of different parts of the operator-service provider/forwarder-shipper chain of actors. By considering the chain of actors on the freight transport market as a service supply chain, the research in this thesis is able to use methods from, and make contributions to, the sustainable supply chain management literature as well as the literature on transport contracting. With this literature as the point of departure, the studies show that there is a matching problem associated with the implementation of low-carbon transports: with the currently used contracts it is usually not rational for the actors on the market to shift to low-carbon transports, even though the total cost on the market, on aggregate, may be reduced from shifting. Nevertheless, there are situations where shifting is rational for all actors. Creating such situations normally requires implementing long-term contracts. The models in this thesis show how such contracts can be designed. However, the models also show that situations where implementation is rational are very sensitive to changes in external parameters such as demand volatility, making implementation high risk in many cases. Another downside is that the environmental improvement is not always as large as one would expect due to inventory build-up and extra truck transports. For low-carbon transports to be implemented in large scale, their costs need to be more in line with conventional transports, and contracts that allocate risks and profits better need to be implemented. Not until these issues are better understood, and contracts and regulation implemented, can a large scale shift to low-carbon transports be expected.

Lund University. Department of Industrial Management and Logistics

Lund, 111 s + bil (137 s), 21,82 MB, 2014

ISBN: 978-91-7623-091-6

Övrig info: Endast kappan. Saknar de 5 uppsatserna

Index terms: Freight transport, Transport mode, Sustainability, Environment protection, Carbon dioxide, Transport operator, Contract, Logistics, Cost, Economics of transport, Thesis
Ämnesord: Godstransporter, Transportslag, Hållbar utveckling, Miljöskydd, Koldioxid, Transportörer, Avtal, Logistik, Kostnader, Transportekonomi, Doktorsavhandling

Nuvarande förutsättningar och försök med längre godståg mellan Gävle och Malmö

Carlson, Annelie; Törnquist Krasemann, Johanna; Vierth, Inge

http://urn.kb.se/resolve?urn=urn:nbn:se:vti:diva-6959

Andra delprojektet av ELVIS-demonstrationsprojektet för längre och tyngre godståg syftar till att analysera dagens förutsättningar för användningen av längre tåg och att utvärdera demonstrationsförsöket där ett 730 meter långt demonstrationståg (i stället för dagens maximala 630 meter) kördes mellan Gävle och Malmö 6–7 oktober 2012. En slutsats är att det är tekniskt möjligt att trafikera tåg som är längre än 630 meter men det finns organisatoriska hinder. För att utnyttja infrastrukturen effektivare, föreslår projektet som en temporär lösning användningen av dedikerade kanaler för längre godståg i specifika korridorer. Jämförelsen av demonstrationstågets färd med upp till 630 meter långa referenståg, försvårades mycket av att centrala data som beskriver referenstågen var svåra att få tag på och delvis osäkra. En viktig slutsats är att det behövs en bättre kartläggning av nuläget för att kunna göra tillförlitliga kvantitativa analyser. Det var möjligt att sammanställa information om elförbrukningen per bruttotonkilometer för demonstrationståget och 85 referenståg. Däremot är det svårt att kvantifiera hur exakt tågens längd, vikt, hastighet och antal stopp med mera, påverkar elförbrukningen var för sig – både med hänsyn till det bristfälliga datamaterialet och det faktum att det finns en relativt stor variation i elförbrukningen oavsett vilken aspekt som studerats. Betydelse av topografin och tågets längd och vikt för elförbrukningen per bruttotonkilometer kan visas. Demonstrationstågets elförbrukning per bruttotonkilometer är generellt sett lågt i jämförelse med referenstågen. Det går dock att dra slutsatsen att elförbrukningen per bruttotonkilometer generellt inte är högre för längre tåg men det går inte att säga att förbrukningen generellt är lägre. Litteraturen och diskussioner med företagen indikerar att näringslivets transportkostnader per transporterat ton gods kan reduceras genom att använda längre godståg. Skalfördelarna kan dock enbart utnyttjas om inte hela lokets dragkraft utnyttjas redan idag. Det är uppenbart att den tillgängliga järnvägsinfrastrukturen avgör vilka tåglängder och -vikter som är affärsmässigt gångbara. Elkostnaderna per transporterat ton kan möjligtvis också reduceras genom att använda längre tåg, men detta kan inte förutsättas utan vidare. En trafikering av längre godståg i större omfattning kräver investeringar i mötesspår, förbigångsspår, terminalspår med mera. De hittills genomförda överslagsmässiga kalkylerna för 750 meter långa tåg tyder på att investeringskostnaderna är relativt blygsamma. Det finns behov av analyser för olika tåglängder eftersom det inte är uppenbart att minimilängden på 750 meter, som krävs på TEN-T:s stomnät från 2030, är optimal.

VTI rapport 828 0347-6030

Linköping, 85 s + bil (10 s), 6,47 MB, 2014

Index terms: Freight train, Length, Weight, Dimension, Efficiency, Energy consumption, Electricity, Cost benefit analysis, Freight transport, Rail bound transport
Ämnesord: Godståg, Längd, Vikt, Dimension, Effektivitet, Energiförbrukning, Elektricitet, Nyttokostnadsanalys, Godstransporter, Järnvägstransporter
Extra ämnesord: Demonstrationsprojekt

Sammanfattning av resultat, erfarenheter och lärdomar från ELVIS demonstrationsprojekt för längre och tyngre tåg

Vierth, Inge

http://urn.kb.se/resolve?urn=urn:nbn:se:vti:diva-6960

ELVIS-demonstrationsprojekt syftar till att analysera hur godstransporterna på järnväg kan effektiviseras. Hypoteserna är att transporterna kan effektiviseras genom att använda längre respektive tyngre godståg och genom att genomföra energibesparande åtgärder samt att det kan finnas andra typer av nyttor för företagen och hela samhället som ett bättre utnyttjande av spårkapaciteten. I denna rapport sammanfattas resultat och erfarenheter från de tre tidigare delrapporterna framtagna inom ramen för projektet. Första delrapporten innehåller en inventering av tidigare genomförda utredningar och försök med längre och tyngre godståg, Hedström (2013). I den andra delrapporten kartläggs och utvärderas nuvarande förutsättningar för att använda ett 730 meter långt tåg (i stället för dagens maximala tåglängd på 630 meter, för transporter av pappersrullar på sträckan Gävle–Malmö), Carlsson, Törnquist Kraseman & Vierth (2014). Den tredje delrapporten Ahlberg (2014) avser virkestransporter. Försöket med högre axellaster kunde inte genomföras som planerat. Istället testades hur elanvändningen per bruttotonkilometer kan reduceras genom att använda längre tåg (18 i stället för 16 vagnar) på sträckan Mora–Gävle. Både vad gäller energieffektiviseringen och möjligheten till effektivare järnvägstransportlösningar generellt drar forskare, företag och Trafikverket slutsatsen att det finns stora behov att kvalitetssäkra de data som tas fram i de befintliga databaserna på Trafikverket. Detta gäller såväl information om elanvändningen som uppgifter om de faktorer som möjligtvis påverkar elanvändningen per (brutto)tonkilometer, det vill säga tågens längd, tågens bruttovikt, antalet stopp, hastighet, topografi och så vidare. ELVIS-projektet initierade ett följdprojekt som syftar till att inventera och analysera Trafikverkets olika databaser på området. Projektet ska ge svar på frågor som vilken typ av data de olika databaserna innehåller, hur data samlas in och sparas, till vilka syften data tas fram och används, i vilken mån data är kvalitetssäkrade och hur data från olika databaser kan kopplas ihop. Trots de olika problemen relaterade till data upplever projektgruppen och de involverade organisationerna att man har lärt sig mycket under resans gång. Detta gäller såväl lösningen av intressanta och störande problem samt identifieringen av olika typer av effektiviseringspotentialer som uppstart av följdprojekt och så vidare. Skogsindustriföretagen samt andra varuägare och transportföretag ser möjligheter att minska transportkostnaderna genom att använda längre och tyngre tåg och/eller att effektivisera elanvändningen. Trafikverket ser att längre och tyngre tåg möjliggör att den befintliga (eller något utbyggda) järnvägsinfrastrukturen utnyttjas mer effektivt. Trafikverket ser även effektiviseringsmöjligheter utgående ifrån en konsekvent mätning av elanvändningen och analys av faktorerna som påverkar elanvändningen. Baserade på de genomförda demonstrationsförsöken och litteraturen kan konstateras att topografin och lokförarnas körstil påverkar elanvändningen. Utgående ifrån de regressionsanalyser som utförts inom ramen för ELVIS-projektet, är det inte möjligt att med säkerhet säga hur tågets längd, tågets vikt och antalet stopp påverkar elanvändningen per (brutto)tonkilometer. I försöket med längre tåg mellan Gävle och Malmö är en viktig slutsats att det är tekniskt möjligt att trafikera godståg som är längre än 630 meter men det finns organisatoriska hinder. Att köra längre tåg kräver någon form av uppoffring för systemet och dess aktörer, till exempel i form av längre restider för tågresenärer, och balansgången mellan olika för- och nackdelar är en central fråga. För att utnyttja infrastrukturen effektivare föreslår ELVIS-projektet, som en temporär lösning, användningen av dedikerade kanaler för längre godståg i specifika korridorer. Tilldelningen av tåglägen i dessa kanaler kan ske under den ordinarie

tilldelningsprocessen. Det skulle dock krävas ett åtagande av Trafikverket att fördela tåglägen flexibelt och för samhället effektivt.

VTI notat 25-2014

Linköping, 30 s + bil (1 s), 657 kB, 2014

Index terms: Freight train, Length, Weight, Dimension, Efficiency, Energy consumption, Electricity, Freight transport, Rail bound transport
Ämnesord: Godståg, Längd, Vikt, Dimension, Effektivitet, Energiförbrukning, Elektricitet, Godstransporter, Järnvägstransporter
Extra ämnesord: Demonstrationsprojekt

Elanvändning för längre och tyngre tåg: sammanfattning av resultat, erfarenheter och lärdomar från ELVIS-demonstrationsprojekt

Vierth, Inge; Ahlberg, Joakim; Carlson, Annelie; Landergren, Magnus; Swärdh, Jan-Erik; Wikberg, Åsa

http://vti.diva-portal.org/smash/get/diva2:807691/FULLTEXT01.pdf

Projektet som redovisas i detta notat analyserar hur godstransporterna på järnväg kan effektiviseras. Hypoteserna är att transporterna kan effektiviseras genom att använda längre respektive tyngre godståg, genom att genomföra energibesparande åtgärder samt att det kan finnas andra typer av nyttor för företagen och hela samhället. I rapporten sammanfattas resultat och erfarenheter från tre tidigare delrapporter framtagna inom ramen för projektet. Skogsindustriföretagen och andra varuägare och transportföretag ser möjligheter att minska transportkostnaderna genom att använda längre och tyngre tåg och/eller att effektivisera elanvändningen. Trafikverket ser att längre och tyngre tåg möjliggör att den befintliga järnvägsinfrastrukturen utnyttjas mer effektivt. Trafikverket ser även effektiviseringsmöjligheter genom en konsekvent mätning av elanvändningen och analys av faktorerna som påverkar elanvändningen. Forskare, företag och Trafikverket slutsatsen att det finns stora behov att kvalitetssäkra de data som tas fram i de befintliga databaserna på Trafikverket. Detta gäller såväl information om elanvändningen som uppgifter om de faktorer som kan påverka elanvändningen, till exempel tågens längd, tågens bruttovikt, antalet stopp, hastighet och topografi. Inom ramen för tre fallstudier, Gävle-Malmö, Holmsund–Skövde och Mora-Gävle genomfördes försök med olika förklarande variabler. Med hänsyn till fallstudiernas och försökens olika förutsättningar och tyngdpunkter är det svårt att göra direkta jämförelser. Några övergripande slutsatser med avseende på elanvändningen kan dock dras, exempelvis: • Tågets vikt (i antal ton) och längd (antal vagnar) ökar elanvändningen i försöken. • I vissa försök finns stöd för att det finns skalfördelar. • Lokförarens körstil (bland annat återmatning) påverkar elanvändningen.

VTI notat 13-2015

Linköping, 49 s, 2,46 MB, 2015

Factors influencing the choice between road and multimodal transportation

Heljedal, Martin

http://urn.kb.se/resolve?urn=urn%3Anbn%3Ase%3Aliu%3Adiva-102169

Non-sustainable transportation is a great part of the stress that human activities put on the environment. Road transportation constituted 74% of the total inland tonne-kilometres in the EU during 2009, to be compared to rail transportation at 15%. In Sweden the numbers are slightly more in favour of rail transportation, but still a small share despite the fact that the European Committee promotes sustainable modes of transport. To reduce the environmental impact from the transport sector, and be able to promote the use of sustainable transport modes, it is important to gain an understanding of why the modal balance is disposed this way. By case studies and a survey, four factors, viz costs, environmental impact, attitudes and risks, and their impact on the choice of mode of transportation for companies located in the vicinity of a rail terminal are studied. The results clearly show that the environmental impact of rail transportation is only a fraction of that of the road transportation and could possibly influence the choice of rail transportation in a positive way. However, rail transportation is less cost efficient, flexible and reliable and these aspects – despite the advantageous conditions in terms of infrastructure and geographical vicinity to a rail terminal – contribute to a negative bias towards rail transportation among companies in the study. Thus, the cost and attitudes factors counteract the choice of rail transportation. In addition, risks, as the final factor, also counteracts the choice, since it is found that respondents consider the risks of disturbances such as delays, theft and accidents to be important when considering mode of transportation and that rail transportation is viewed as lacking compared to road transportation. This thesis contributes to the existing theory about the costs-related issues and the environmental impact of rail transportation, as well as how companies with beneficial conditions to employ rail transportation consider the mode with regards to e.g. reliability and safety, and how these factors influence the modal choice among buyers of transportation services that are located close to a rail terminal. With this knowledge, policymakers are informed of which areas to concentrate taxes, subsidizations and information to. These things are in all probability necessary if a large scale modal shift is desired. The contribution of the effect a modal shift could have on the environmental impact of the transportation might make certain practitioners that compete on a market where a low environmental footprint is a strong competitive weapon to rethink their modal choice.

Linköping University. Department of Science and Technology Linköping studies in science and technology. Thesis 1635 0280-7971

Norrköping, 53 s + bil (11 s), 2013

ISBN: 978-91-7519-450-9

Index terms: Intermodal transport (freight), Transport operator, Cost, Attitude (psychol), Environment protection, Risk, Questionnaire
Ämnesord: Intermodala transporter, Transportörer, Kostnader, Attityder, Miljöskydd, Risk, Enkäter
Extra ämnesord: Transportmedelsval

Kan stadsbors användning av IT bidra till ett hållbart samhälle?: en kunskapsöversikt

Apelmo, Elisabet; Greger, Henriksson

http://kth.diva-portal.org/smash/get/diva2:729244/FULLTEXT02.pdf

Rapporten behandlar vardagliga handlingsmönster med miljökonsekvenser i förhållande till användning av informations- och kommunikationsteknologi (IKT, vad som i dagligt tal benämns som IT). Våra frågeställningar har gällt a) hur miljömässigt lovande respektive problematiska handlingsmönster i stadsbors vardag kan identifieras samt b) hur potentialen för handlingsmönster att omvandlas genom användning av IKT kan bedömas, och i slutändan även utnyttjas, inom ramen för städers hållbara utveckling. Frågeställningarna har vi belyst genom de studier och exempel på handlingsmönster vi funnit i vår kunskapssammanställning. Rapporter och fallstudier visar på hur IKT används för att exempelvis effektivisera och informera, respektive dela på användning av resurser, produkter och fordon. Utifrån den miljösociologiska basen menar vi att det går att bedöma när och hur IKT eventuellt kan fungera som en möjliggörande teknik som förbättrar eller ersätter tidigare sätt att agera på. Det är även möjligt att diskutera de mer allmänt vetenskapligt definierade fenomen, som substitution och induktion, som vi också tagit upp i kunskapssammanställningen. Vi har tagit upp hur samhällsstrukturer både möjliggör och begränsar samtidigt som de faktiskt endast kan sägas existera, eller upprätthållas, genom människors handlingar och i deras minne. Förändring uppstår i dynamiken mellan människors handlingar och de strukturer som har skapats av tidigare handlingar. Genom att handlingsmönster reproduceras med vissa nya inslag, som då IKT får nya användningsområden, förändras mönster av sociala relationer och system för hur vi exempelvis använder energi, reser, konsumerar eller umgås under såväl arbete som fritid. Vår litteraturgenomgång antyder att den kunskap som CESC partners tillsammans har tillgång till i dagsläget kan beskrivas som splittrad och med slagsida mot vissa typer av handlingsmönster och sektorer. Miljömässigt lovande handlingar är mer utforskade än problematiska sådana, liksom IKT-användning för pendlingsresor och hushållens energianvändning är mer utforskade än det mesta annat som människor använder IKT till. Forskning rörande fritid och underhållning i relation till miljö lyser i stort sett helt med sin frånvaro.

Kungliga tekniska högskolan. Centre for Sustainable Communications Report from the KTH Centre for Sustainable Communications 1654-479X

Stockholm, 51 s, 226 kB, 2014

Index terms: Sustainability, Sustainable transport, Internet, Urban area, Sociology
Ämnesord: Hållbar utveckling, Hållbara transporter, Internet, Tätorter, Sociologi
Extra ämnesord: Reseplanerare

Making travel sustainable with ICT?: the social practice of travel planning and travel information use in everyday life

Nyblom, Åsa

http://kth.diva-portal.org/smash/record.jsf?pid=diva2%3A756954&dswid=-8104

Denna avhandling tar resenärens perspektiv, och undersöker från vardagslivets horisont hur resor egentligen planeras, och hur information används när de många, ofta obemärkta, vardagsresorna görs i staden. Etnografiska fältstudier i södra Stockholm, gjorda och analyserade med ett praktikteoriperspektiv, visar att människor använder sig av många olika typer av information för att planera och genomföra sina resor. Därför bör begreppet reseinformation definieras vitt nog att rymma både informella, formella, analoga och digitala typer av reseinformation. Först då är det möjligt att iaktta interaktioner mellan dessa, och också se informationens eventuella potential som förändringsfaktor för hållbart stadsresande. Även situationer när reseinformation inte används uppmärksammas och diskuteras. Reseplanering är i vardaglig praktik något som sker lite i taget, i mellanrummen mellan andra sysslor och aktiviteter. Det är en process mer förgrenad i tid, rum och innehåll än den avgränsade sökning efter information om bästa sättet att ta sig mellan A och B som många existerande IT-baserade reseplanerare verkar förutsätta och i dagsläget assisterar. Reseplanering är starkt knutet till den övergripande planeringen av aktiviteter i livet, och reseplanering har därför oftast ett vidare tidsspann än endast en resa. Planering av resor inkluderar även hänsyn till faktorer som nödvändiga förberedelser (saker att göra innan avfärd/ta med sig på resan); hantering av fordon och bagage i tid och rum (få hem cykeln/bilen igen eller få den säkert parkerad); vädret (nuvarande och prognostiserat); sociala relationer (potentialen för konflikter/positiv samvaro vid olika färdmedelsval); sociala normer (om gott föräldraskap eller hur man för sig på kollektiva färdmedel); och hälsoaspekter (vilja till motion eller oförmåga att gå i trappor). Fältarbetet gjorde tydligt att reseinformation ibland används som en snuttefilt – något att ty sig till och hålla i handen på okänt territorium tills du har kommit till målet för din resa. Reseplanering kan också, beroende på livssituation, antingen upplevas och liknas vid husbygge med prefabricerade element – samma standardiserade, välkända bitar sammanfogas på ungefär samma sätt varje gång; eller också ett korthus – om någonting ändras brakar hela huset ihop, och måste byggas upp igen med en helt annan design. Under de senaste decennierna har det skett en snabb utveckling av IT-lösningar på transportområdet. Olika typer av reseinformationstjänster har föreslagits som ett verktyg för att ändra resebeteenden och därmed minska transporters miljöpåverkan. Med utgångspunkt från studiens 6 empiriska insikter i hur reseplanering går till i praktiken, och hur reseinformation används blir det tydligt att morgondagens reseplanerartjänster, om de kopplades ihop med andra digitala system vi använder i vår vardag, skulle kunna utformas på ett sätt som utvidgar systemets ”assistanshorisont” för att bättre passa ihop med reseplaneringspraktikerna i vår vardag. Potentialen och rollen för reseinformationstjänster och IT i arbetet med att minska transporters miljöpåverkan bör diskuteras från ett perspektiv som är kritiskt till alltför linjära och instrumentella utgångspunkter, vilket denna avhandling bidrar till.

KTH Royal Institute of Technology. Architecture and the Built Environment TRITA-INFRA-FMS-LIC 2014:02

Stockholm, 50 s, 11,97 MB, 2014

ISBN: 978-91-7595-317-5

Index terms: Journey, Planning, Transport mode, Passenger information, Weather
Ämnesord: Resor, Planering, Transportslag, Resenärsinformation, Väder
Extra ämnesord: Färdmedelsval

Effective transport policies for corporate mobility management

Many companies and other large employers have put in place initiatives to address the traffic-related nuisances generated by their activities and, in particular, the traffic generated by their workers and customers. Such Corporate Mobility Management (CMM) initiatives are the focus of this report which investigates the success factors in individual best practice cases at the company level as well as the roles, if any, public authorities can play in facilitating the uptake of CMM. The report provides guidance to governments on effective strategies for addressing and mitigating the traffic generated by commuter and customer travel.

Organisation for Economic Co-operation and Development, OECD.

International Transport Forum, ITF

Paris, 103 s, 2010

ISBN: 9789282102497

Index terms: Mobility management, Journey to work, Personnel, Enterprise, Policy

Peak car for urban Swedish men?

Bastian, Anne; Börjesson, Maria

http://www.transportportal.se/swopec/CTS2015-9.pdf

We study long-term trends in regional car travel demand within and across socio-demographic groups in Sweden, using cross-sectional data from National Travel Surveys, spanning the period from 1978 to 2011. We find that the reduction in per-adult driving in Sweden mainly occurs among urban men. Urban men of all income groups reduced their driving for both commuting and non-commuting trips in conjunction with rising gasoline prices, which may have contributed to this development. We find that driving among those socio-demographic groups, who have better opportunities to reduce their driving, and driving for discretionary rather than commute purposes is being reduced over time. Sweden is ranked among the most gender-equal countries in the world; yet we find a substantial remaining gender gap in the share of adults driving a car on an average day, even when controlling for other socio-economic differences.

Centre for Transport Studies Stockholm, CTS Working papers in Transport Economics 2015:9

VTI

KTH Royal Institute of Technology

S-WoPEc, Scandinavian Working Papers in Economics

Stockholm, 20 s, 1,25 MB, 2015

Index terms: Car, Use, Journey, Behaviour, Fuel, Price, Man, Woman, Urban area, Rural area, Regression analysis
Ämnesord: Bilar, Användning, Resor, Beteende, Bränsle, Priser, Män, Kvinnor, Tätorter, Landsbygd, Regressionsanalys
Extra ämnesord: Färdmedelsval, Statistisk analys

Förnybara drivmedel: möjligheter och hinder sett utifrån privatbilisters och aktörers perspektiv

Forward, Sonja; Nyberg, Jonna; Forsberg, Inger; Nordström, Mattias; Wallmark, Cecilia; Wiberg, Erik; Wolf, Sven

http://vti.diva-portal.org/smash/get/diva2:799974/FULLTEXT01.pdf

I detta projekt ingick tre olika delstudier med syfte att tillhandahålla en fördjupad förståelse för användarnas behov av och inställning till bilar som drivs med alternativa drivmedel såsom, el, vätgas och biogas. Förutom detta undersöktes inställningen till bilar och klimatfrågor i allmänhet men också vilka förutsättningar man ser för olika bilar med alternativa drivmedel. De olika studierna använde sig av tre olika metoder; fokusgrupp, enkät och intervjuer. I fokusgrupperna ingick sex personer. I enkätstudien deltog 487 slumpmässigt utvalda trafikanter och i intervjustudien nio aktörer från myndigheter, branschorganisationer och media. Resultaten visar att vid köp av bil är säkerhet och tillförlitlighet viktigare än utsläppen av CO2. Synen på bilar som drivs med alternativa drivmedel (elbil, bränslecellsbil, biogasbil), skiljer sig inte markant åt. Priset man är villig att betala för en sådan bil är betydligt lägre än vad dessa bilar kostar i nuläget. Rent allmänt kan man hävda att konsumenterna vill att en bil som drivs med alternativa drivmedel liknar eller är bättre än en konventionell bil. Studien visar också att politiker har en avgörande roll för hur utvecklingen av framtida alternativa drivmedel och infrastruktur för sådana ska kunna utformas. Enligt de intervjuade är det största problemet inte tekniken utan hur man ska få till stånd en infrastruktur för dessa fordon, och att de kommer ut på marknaden. Näringslivet är en viktig aktör som är villiga att satsa om de kan se att verksamheten kan bli lönsam. Långsiktighet är ett nyckelord som nämns både då det gäller politiska beslut och informationsspridning. I det senare fallet eftersom studierna visar att det finns stora brister i kunskapen hos allmänheten samtidigt som det finns en misstro mot den information som sprids. Slutligen visar studierna att det behövs ett helhetsgrepp där fokus inte enbart ligger på bränslen utan även utvecklandet av attraktiva och tillgängliga städer.

VTI rapport 845 0347-6030

Linköping, 111 s, 2,05 MB, 2015

Index terms: Alternative energy, Fuel, Biogas, Electric vehicle, Car, Hydrocarbon, Driver, Attitude (psychol), Acceptability, Interview, Questionnaire
Ämnesord: Förnybara energikällor, Bränsle, Biogas, Elfordon, Bilar, Kolväte, Förare, Attityder, Godtagbarhet, Intervjuer, Enkäter

Elfordon i Malmö i familjen och på arbetet: erfarenheter av elbilar, elmopeder och elcyklar

Kröyer, Höskuldur RG; Johansson, Kristina

Lunds universitet. Tekniska högskolan. Teknik och samhälle. Trafik och väg Bulletin 287 1653-1930

Lund, 85 s, 2013

Övrig info: Felaktigt ISSN 1653-1922 i publikationen.

Index terms: Electric vehicle, Electric bicycle, Use, Attitude (psychol), Journey, Behaviour, Test, Questionnaire, Interview
Ämnesord: Elfordon, Elcyklar, Användning, Attityder, Resor, Beteende, Test, Enkäter, Intervjuer
Extra ämnesord: Reslängd

I vilken utsträckning kan elcyklar (och elmopeder) ersätta dagens biltrafik?

Winslott Hiselius, Lena; Svensson, Åse; Bondemark, Anders; Rye, Tom

http://www.transportportal.se/Energieffektivitet/I%20vilken%20utsträckning%20kan%20elcyklar%20och%20elmopeder%20ersätta%20dagens%20biltrafik.pdf

Gruppen om använder elcykel är enligt datamaterialet främst män med tillgång till bil. Innehavet är ganska jämnt fördelat över 35 år. Elcyklisterna är teknikintresserade samtidigt verkar miljöintresset vara ett drivande motiv till varför elcykel införskaffades. Minskad restid verkar ha en viss betydelse speciellt för den yngre åldersgruppen. Majoriteten av de svarande instämmer i påståendet att elcykeln medför mindre fysisk ansträngning speciellt för den äldsta åldersgruppen. Resultatet visar på att främst bilresor har ersatts med elcykel. Å andra sidan vet vi inte hur representativa de personer är som vi fångat i enkätstudien vilket i sin tur kan leda till att vi överskattar eller underskattar effekterna vad gäller ersättning av bilresor och användning av elcykeln. Baserat på antagande om utveckling av elcykelanvändande till 2030 har en potential beräkning gjorts. Beräkningen visar på att det finns stora energivinster att göra. Vi har vidare gjort en potentialberäkning för användande av elcykel för tjänsteresor i kommunalverksamhet. Beräkningen visar på att det finns relativt stor potental att spara energi genom att ersätta bilresor med elcykel.

Lunds Universitet, Tekniska högskolan i Lund. Teknik och samhälle. Trafik och väg Bulletin 288 1653-1930

Lund, 60 s, 490 kB, 2013

Index terms: Electric bicycle, Use, Journey, Behaviour, Questionnaire, Carbon dioxide, Emission, Calculation
Ämnesord: Elcyklar, Användning, Resor, Beteende, Enkäter, Koldioxid, Emissioner, Beräkning

Differences in the effects of fuel price and income on private car use in Sweden 1999-2008

Pyddoke, Roger; Swärdh, Jan-Erik

http://vti.diva-portal.org/smash/get/diva2:779184/FULLTEXT01.pdf

The objective of this paper is to analyse how the use of privately owned cars in Sweden varies across a number of background parameters including fuel price, disposable income, car purchase cost index, children over 18, employment and the car owners' distance to work. These factors are analysed separately for men and women, individuals living in urban, rural and sparsely populated areas as well as disposable income quartiles. In particular the adaptation of car use of low income car owners in rural and sparsely populated areas to fuel cost and disposable income variations is analysed. Register data of the whole population in Sweden taken from the Swedish tax authorities for 1999-2008 as well as kilometre readings from the National Vehicle Inspection is used. This allows tracking individual changes in car use over ten years as well as to contrast car use in rural and sparsely populated areas to car use in urban areas. Car use is modelled with a dynamic panel data specification, permitting proper methods to deal with endogeneity problems. Small geographical differences in the sensitivity to variations in disposable income are found. For fuel cost on the other hand, there is a tendency towards higher price sensitivity in rural areas especially in the two lowest income quartiles. In sparsely populated areas, there is no higher sensitivity of fuel price compared to urban areas. The income elasticity of car use is fairly small and decreases with increasing disposable income. This latter finding is compatible with the hypothesis of car driving saturation in the rich countries around the world. The car travel elasticity with respect to fuel price is estimated to be between -0.2 and -0.4 in the short run. Here the pattern is as expected with decreasing fuel-price elasticity with increasing income.

Centre for Transport Studies Stockholm Working papers in Transport Economics 2015:1

VTI

KTH Royal Institute of Technology

S-WoPEc, Scandinavian Working Papers in Economics

Stockholm, 26 s, 792 kB, 2015

Index terms: Car, Use, Private transport, Fuel, Price, Income, Man, Woman, Rural area
Ämnesord: Bilar, Användning, Privata transporter, Bränsle, Priser, Inkomst, Män, Kvinnor, Landsbygd
Extra ämnesord: Statistisk analys

Resfria möten: vad blir effekterna och hur redovisar man dem?: slutredovisning till Energimyndigheten

Voytenko, Yuliya; Arnfalk, Peter; Lindeblad, Peter A; Klintman, Mikael; Mont, Oksana

http://www.transportportal.se/Energieffektivitet/Resfria-moten-effekterna.pdf

Rapporten presenterar resultat från ett forskningsprojekt ”Mäta resfria möten” (MRM), som bedrivs av Internationella miljöinstitutet (IIIEE) vid Lunds universitet i 2011-2014 med finansiering från Energimyndigheten och Trafikverket, och syftar till att utveckla ett ramverk, indikatorer och metoder för utvärdering, uppföljning och redovisning av resfria möten (RM), deras användning och effekter på samhälle, organisation och individ i svenska myndigheter. Data samlades i genom litteraturstudier, 33 djupintervjuer samt ett antal undersökningar i svenska myndigheter. Projektet föreslår att organisationer som vill följa upp användningen av RM och deras effekter, med hjälp av 17 indikatorer mäter RM-användningen och effekterna på tjänsteresor, energi, klimatgaser, effektivitet, personal, negativ stress, social interaktion, jämställdhet och jämlikhet samt disciplin och uppmärksamhet. Metoder föreslås för uppföljning och analys av RM:s effekter.

Internationella miljöinstitutet (IIIEE) vid Lunds universitet

Lund, 70,s, 5,49 MB, 2013

Index terms: Carbon dioxide, Emission, Journey, Work
Ämnesord: Koldioxid, Emissioner, Resor, Arbete
Extra ämnesord: Tjänsteresor

Making the transition to a 'green' vehicle fleet: an analysis of the choice and usage effects of incentivising the adoption of low-emission vehicles

Whitehead, Jake E

http://kth.diva-portal.org/smash/record.jsf?pid=diva2%3A655496&dswid=1669

Övergången till en ”grön” fordonsflotta är en betydelsefull strävan för samtliga beslutsfattare. När de globala utsläppen av växthusgaser ständigt ökar råder det ingen tvekan om att samtliga åtgärder som kan bidra till en hållbar utveckling bör implementeras. Vid utformandet av sådana åtgärder är det dock viktigt ordentliga kostnads-nyttoanalyser utförs, så att hänsyn tas till potentiellt negativa ”rebound” och förestålse fås för vilka individer som påverkas. I två artiklar analyserar denna avhandling effekterna på val och användning av ett undantag för fordon med låga utsläpp (LEV) från Stockholms trängselskatt system. Ambitionen med denna studie har varit att förstå: i vilken utsträckning detta undantag i politik påverkade efterfrågan på LEVs, vilka personer som den riktade sig till, om politiken lett till några ”rebound” effekter (ökad LEV användning), och slutligen vad effekten var i termer av utsläpp. Artikel I använder en MNL modell för att undersöka demografin av de personer som köpt en LEV i Stockholm under 2008 samt i vilken utsträckning undantaget påverkade denna efterfrågan. Det konstaterades att de ägare som bor inom avspärrningen men som pendlade över gränsen hade den högsta benägenheten att köpa en undantagen LEV. Undantagen från tränselskatt visade sig ha haft en väsentlig inverkan på efterfrågan på undantagna LEVs, andelen av dessa fordon ökade med 1,9% till 18,9% totalt eller ytterligare 550 LEV inköp under 2008. I artikel II beräknas skillnaderna i årlig användning mellan LEV och konventionella fordon med demografiskt liknande ägare genom ”propensity score matching” i syfte att kontrollera för potentiell självselektion. Genom detta förfarande fanns de direkta utsläppen från fordonsägare som övergått till en LEV ha minskat med 52,4%. Även om undantaget från tränselskatt var delvis ansvarigt för att öka antalet LEVs verkar det också ha uppmuntrat en ökad årlig användning, vilket ledde till ”rebound” effekter som motverkade den potentiella utsläppsminskningen (ökning i LEV användning för ägare som åkte över gränsen var 12,2% för dem som levde inom och 8,5 % för dem som bodde utanför). I denna avhandling har effekterna av en incitament baserad politik i Stockholm på både efterfrågan och användning av LEVs lyfts fram. Fördelarna liksom de möjliga komplikationerna av detta initiativ har också diskuterats i hopp om att upplysa beslutsfattare så att de potentiella utsläppsminskningarna från liknande politiska initiativ i framtiden kan maximeras. Personliga fordon kommer sannolikt fortsatt dominera andelen hem-arbete resor under de kommande åren och det är därför nödvändigt att städerna fortsäter sina ansträngningar förberömvärd att uppmuntra övergången till en ”grön” fordonsflotta. Det är dock viktigt att dessa ansträngningar leder till incitament baserad politik som är balanserad, rimlig och utformade för att minimera de potentiellt betydande ”rebound” effekter.

Kungliga tekniska högskolan. Institutionen för transportvetenskap Trita-TSC-LIC 13:008 1653-445X

Stockholm, 39 s, 10,58 MB, 2013

ISBN: 978-91-87353-18-5

Index terms: Congestion charging, Vehicle, Alternative energy, Fleet of vehicles
Ämnesord: Trängselavgifter, Fordon, Förnybara energikällor, Fordonspark
Extra ämnesord: Miljöbilar

Getting there and back again: commuting and ICT in six cities across the globe

Börjesson Rivera, Miriam; Henriksson, Greger; Åkerlund, Maria

http://kth.diva-portal.org/smash/get/diva2:492663/FULLTEXT01.pdf

Ericsson ConsumerLab performed a qualitative exploratory study of how people experience daily commuting in three different countries. This report aims to present the outcome of the study in such a way that the data can be useful for further analyses and studies of commuting in relation to information and communications technology (ICT) use and environmental sustainability. Based on the study's findings this report will present analytical data on: i) how ICT can be linked to everyday travel in order to facilitate commuting from the user's point of view; and ii) how ICT solutions can enable commuting in an environmentally more sustainable way. The study, which had an ethnographic approach, showed that in general, commuters would like their commuting time to be, or at least seem, as short as possible. The respondents spend hours commuting every week and often claim to consider it a waste of time. Regardless of means of transport, they would like to get the most out of their commuting time (working, socialising, relaxing etc.), which implies that there is a demand for further technological improvements in this area (voice recognition services in cars, privacy settings in public transport, connectivity in public transport, etc.). An aspect that adds to how people perceive their commuting time concerns the extent to which its duration is predictable – even if the time cannot be shortened, commuters at least want to know how much time they will spend on their daily commute, so that they can plan their day with more certainty.

Kungliga tekniska högskolan.Centre for sustainable communications TRITA-SUS 2012:1 1654-479X

Stockholm, 30 s, 450 kB, 2012

Index terms: Journey to work, Public transport, Commuter, Mobile phone, Sustainability, Thesis, Attitude (psychol), Passenger information, Driver information, Car, Interview
Ämnesord: Arbetsresor, Kollektivtrafik, Pendlare, Mobiltelefoner, Hållbar utveckling, Doktorsavhandling, Attityder, Resenärsinformation, Förarinformation, Bilar, Intervjuer
Extra ämnesord: Informationssystem i fordon

Driving it home!: exploring and enhancing the adoption of eco-driving

Strömberg, Helena

http://publications.lib.chalmers.se/records/fulltext/184293/184293.pdf

One strategy to reduce the environmental impact of the transport sector is to increase the adoption of eco-driving among both professional and private drivers. Attempts to introduce eco-driving have though had varying success, and many questions remain to be answered. Hence, the aim of this thesis has been to increase knowledge on the mechanisms behind the adoption of eco-driving. To fulfil the aim, three themes: eco-driving in practice, understanding eco-driving, and interventions to enhance the adoption, were explored in an integrated analysis of three studies. Multiple influences on drivers' possibility and intention to adopt eco-driving were confirmed in the analysis. Influences include driver-related factors like ability and attitudes, as well as contextual influences originating in the vehicle, the physical environment and the social context. For professional drivers, the organisational context was identified as major source of influences. A hierarchy of eco-driving behaviours is introduced in the thesis, consisting of operational, tactical, and strategic levels of eco-driving. When investigated, participants' understanding of eco-driving appears concentrated to one level or part of one level in this hierarchy. The limited interpretations give rise to issues when the motivated participants' perceived and actual space for action does not match the eco-driving advice they know. It is hence proposed that interventions should aim to enhance the action space for eco-driving. Enabling and facilitating interventions should be put in place to widen the actual action space, and exemplifying and encouraging interventions should target the perception of it. In conclusion, the mechanisms behind the adoption of eco-driving are complex and the influences numerous. Still, adoption can be enhanced if these influences are taken into consideration and interventions designed to increase both perceived and actual eco-driving action space.

Chalmers University of Technology. Department of Product and Production Development Report 82
1652-9243

Göteborg, 64 s, 1,01 MB, 2013

Övrig info: Endast kappan. Saknar de 4 uppsatserna.

Index terms: Energy conservation, Driving (veh), Behaviour, Fuel consumption
Ämnesord: Energihushållning, Fordonskörning, Beteende, Bränsleförbrukning

En känslighetsanalys av transportpolitiska styrmedel

Backa Brandt, Fredrik

http://trafa.se/PageDocuments/Rapport_2013_6_En_kaenslighetsanalys_av_transportpolitiska_styrmedel.pdf

Syftet med denna rapport är att analysera hur den samhällsekonomiska lönsamheten av olika transportpolitiska åtgärder varierar mellan olika framtidsscenarier. Fyra olika framtidsscenarier skapades genom att föra samman de två trenderna ekonomisk utveckling i Sverige respektive teknisk utveckling i ett scenariokors. Tidshorisonten för scenarierna och för denna studie sträcker sig fram till år 2030. Studien visar att skilda transportpolitiska styrmedel kan ha olika potential beroende på hur framtiden utvecklas. Här har beroende av ekonomins tillväxttakt och den framtida tekniska utvecklingen analyserats. Det kan finnas anledning att även undersöka hur andra framtidsscenarier påverkar lönsamheten för olika transportpolitiska åtgärder. Det gäller i synnerhet åtgärder som skapar starka låsningar för framtiden, kanske främst större infrastrukturprojekt.

Trafikanalys Rapport 2013:6

Stockholm, 54 s, 2013

Index terms: Cost benefit analysis, Evaluation (assessment), Case study, Bypass (loop road), Congestion charging, Mobility management
Ämnesord: Nyttokostnadsanalys, Utvärdering, Fallstudier, Förbifarter, Trängselavgifter, Mobility management

Sociala och ekonomiska konsekvenser av styrmedel för ny teknik i transportsystemet: en kunskapsöversikt

Petersen, Tom

http://www.bisek.se/data/research/d_Kunskapsöversikter/5a1.pdf

Rapporten går igenom litteratur och relevanta frågeställningar för forskning om hur styrmedel påverkar teknikutvecklingen inom bilparken, samt hur hushållen påverkas av sådana styrmedel. Den begränsar sig till teknikutveckling avseende framdrivnings-teknik och bränslen, och utesluter därmed t.ex. mobilitetstjänster och utveckling av autonoma fordon. Existerande styrmedel och deras effekter på bilparken sammanfattas kort, och fördelningseffekterna kommenteras bl.a. utifrån en färsk engelsk studie. Vi refererar en pågående debatt om styrmedels ”teknikneutralitet” och finner att be-greppet inte går att använda utan att närmare preciseras – det finns olika grader av teknikneutralitet, och den beror också på vilket mål man vill uppnå. Vi nämner också kort vilka för- och nackdelar som olika möjliga framtida energibärare för transporter har: biodrivmedel, el och vätgas. Hushållens perspektiv behandlas utifrån sitt nuvarande beteende som har kunnat utlä-sas av litteraturen, och slutsatser har dragits om hur de påverkas av miljö- och klimat-motiverade styrmedel. Slutsatsen är att hushållen kommer att drabbas av höjda trans-portkostnader i vilket fall som helst; om det är av ny teknik eller av dyrare befintliga bränslen spelar inte någon avgörande roll. Ekonomiska och andra styrmedel blir då åtminstone inte någon nackdel, eftersom de syftar till att göra den nya tekniken billigare och mer tillgänglig. De kan förstås ha fördelningsmässiga konsekvenser, men vi argumenterar för att de fördelningsmässiga effekterna av existerande förhållanden kanske är minst lika allvarliga.

Centre for Transport Studies Stockholm, CTS

Stockholm, 966 kB, 38 s, 2012

Projektnamn: BISEK

Index terms: Alternative energy, Car, Fleet of vehicles, Hybrid vehicle, Electric vehicle, Tax, Cost, Vehicle ownership
Ämnesord: Förnybara energikällor, Bilar, Fordonspark, Hybridfordon, Elfordon, Skatter, Kostnader, Fordonsinnehav

Miljöbilens förutsättningar i glesa bygder: tillgänglighet samt sociala och ekonomiska aspekter för individer och hushåll: kunskapsöversikt för BISEK

Haugen, Katarina

http://www.bisek.se/data/research/d_Kunskapsöversikter/5b.pdf

I denna rapport presenteras en översikt av forskningslitteraturen kring förutsättningarna för adoption av miljöbilar – definierat som personbilar drivna av alternativa drivmedel – i glest befolkade miljöer, s.k. glesa bygder. Fokus riktas mot frågor kopplade till tillgänglighet samt sociala och ekonomiska aspekter på individ? och hushållsnivå. Geografiskt sett ligger fokus främst på det svenska sammanhanget. Ur metodologisk synvinkel baseras rapporten på en litteraturöversikt som omfattar flera olika teman: varierande synsätt och definitioner av rurala eller glesbefolkade områden samt den heterogenitet som döljs inom sådana grova kategoriseringar; tillgänglighetsrelaterade problem i glesa bygder; geografiska variationer i den svenska bilparkens egenskaper; tillgänglighet till förnybara drivmedel; teoretiska perspektiv på innovationsspridning och adoption av ny teknologi samt geografiska perspektiv på dessa frågor; samt forskning specifikt kring adoption av miljöbilar. Vidare diskuteras andra sociala och ekonomiska aspekter som potentiellt kan ha relevans för adoption av miljöbilar. Utöver litteraturöversikten genomfördes också en explorativ pilotintervju med en person boende i en glest befolkad miljö i Sverige. Bristfällig lokal tillgänglighet är ett utbrett problem i glesa bygder, och en central anledning till det utbredda bilberoendet i dessa miljöer. Samtidigt bör det betonas att det inom geografiska kategorier som t.ex. ”glesbygd” eller ”landsbygd” finns stora skillnader i förutsättningarna för tillgänglighet beroende inte bara på det lokala utbudet av t.ex. service utan även andra förhållanden som exempelvis platsens läge i förhållande till större tätorter och städer samt de boendes resvanemönster. Adoptionen av miljöbilar i glesa bygder har än så länge varit av begränsad omfattning. Många av de kommuner som till stor del är glest befolkade har bland de lägsta andelarna miljöbilar i bilparken, som istället domineras av fordon drivna av konventionella fossila drivmedel. Tillgänglighet till grundläggande infrastruktur (tankställen) för förnybara drivmedel är givetvis en central förutsättning för miljöbilsadoption, men brister i detta avseende tycks inte ha någon avgörande betydelse för varför miljöbilar är relativt sällsynta i glesa bygder. Teoretiska perspektiv på temat innovationsspridning ger vid handen att olika grupper (t.ex. med avseende på socioekonomiska attribut) tenderar att adoptera innovationer i olika skeden av diffusionsprocessen. Innovationer tenderar också att uppvisa ett spridningsmönster i riktning från de högre till de lägre nivåerna i den urbana ortshierarkin. Den hittillsvarande forskningslitteraturen kring adoption av miljöbilar präglas av en avsaknad av tydliga geografiska perspektiv i allmänhet och en brist på studier som specifikt fokuserar på glesa bygder i synnerhet. Resultaten av en intervju med respondent boende i en gles miljö i Västerbottens inland ger vid handen att valet av bil främst styrs av ekonomiska faktorer, medan miljöhänsyn är av underordnad betydelse. Respondenten gav också uttryck för en brist på kunskap kring miljöbilar och ett synsätt där miljöbilar är en icke?fråga, d.v.s. någonting som ligger utanför medvetandesfären. Det finns ett flertal potentiella hinder såväl som möjligheter för ökad miljöbilsadoption i glesa bygder, med avseende på både kontextuella och socioekonomiska faktorer.

Umeå universitet. Transportforskningsenheten TRUM-rapport 2012-01 1403-6924

Umeå, 2,80 MB, 38 s, 2012

Projektnamn: BISEK

Index terms: Hybrid vehicle, Electric vehicle, Alternative energy, Car, Fuel, Vehicle ownership, Social factors, Cost, Rural area

Ämnesord: Hybridfordon, Elfordon, Förnybara energikällor, Bilar, Bränsle, Fordonsinnehav, Sociala faktorer, Kostnader, Landsbygd

Feasibility of voluntary reduction of private car use

Friman, Margareta; Pedersen, Tore; Gärling, Tommy

http://www.bisek.se/data/research/d_Kunskapsoversikter/2a.pdf

Depletion of energy and global warming are expected future consequences of the worldwide increasing trend in ownership and use of private cars. In addition many countries are today facing substantial environmental and societal costs of private car use such as congestion, noise, and air pollution. Particularly in urban areas, these consequences are urgent problems that need to be solved. Transport authorities therefore implement various policy measures that aim to modify or reduce private car use. These are generally referred to as Travel Demand Management (TDM) measures. In this research report we propose a classification of the various TDM-measures, encompassing the specific characteristics of each, how the various measures may be distinguished from each other and to what extent they may interact, as well as how effective they are in modifying or reducing private car use. One distinction between the various TDM measures is that between coerciveness and non-coerciveness, that is whether a change is forced upon the private car users (e.g., road closures) or whether they are motivated to make a voluntary change (e.g., informational campaigns). Another partly overlapping distinction is that between top-down and bottom-up processes, where the former refers to changes that are not freely chosen, whereas the latter empowers car users to voluntarily change. A third distinction is that of time scale, that is at what times of day the measures are implemented, for instance, congestion pricing only during peak hours. The fourth distinction is spatial scale, that is where the measure is applied, for instance in the city centers. Marked-based (e.g., pricing mechanisms) versus regulatory-based (e.g., legislation) measures makes up a fifth distinction. A final distinction is that between influencing latent versus manifest travel demand. Measures that aims to impact the former typically consist of, for instance, building of new roads to reduce congestion, whereas measures that aim to impact the latter is characterized by an impact on manifest travel behaviour, for instance, limiting car access to specific areas at specific times of day.

Karlstads universitet Karlstad University studies 2012:30 1403-8099

SAMOT

Karlstad, 499 kB, 38 s, 2012

Projektnamn: BISEK

Index terms: Mobility management, Method
Ämnesord: Mobility management, Metoder

Car users' switching to public transport for the work commute

Eriksson, Lars

http://urn.kb.se/resolve?urn=urn:nbn:se:kau:diva-7334

The general aim of the present thesis was to investigate the determinants of car users' switching to public transport when driving to work. Since the quality of services is particularly low in medium-sized cities, making the car a much more attractive option, the studies focus on car-use in such cities.; Four studies were conducted. In the first (Paper I), an Internet survey addressing what people using their cars to commute to work in a medium-size city believe would make them reduce their car-use as well as what improvements to public transport services they believe would make them use those services was conducted. The results showed that, the further to work and/or bus stops - the more the participants desired increased frequencies and shorter travel times, but less often lower fares.; In the second study (Paper II), using a web-based experimental simulation, participants were given the task of planning their travel to and from work, including the performing of additional activities in accordance with predetermined agendas. The main results of this were that shorter travel times and good access to bus stops led to greater bus use while constraints imposed by a busy daily agenda led to greater car-use, in particular if car costs were low.; In the third study (Paper III) a scale for measuring satisfaction with travel was developed. A new measure of travel-related subjective well-being (SWB), a 9-item self-report Satisfaction with Travel Scale (STS), was developed. The results showed that STS is reliable and differentiates between changes in travel conditions.; In the fourth study (Paper IV) which attributes other than time and cost contribute to the preference of car over bus in the choice of travel mode was investigated. Using STS, developed in Paper III the effect of different travel modes on satisfaction with travel was studied.; The conclusions of this thesis are that a public transport system must appear attractive, not only to its present users, but also to prospective users who currently use their cars. To appear attractive, it must not be too expensive and must have timetables and routes that allow users to travel in an efficient manner. One measure that can be used to force commuters out of their cars is higher car-use costs; however, car-use costs may need to be substantially higher than the cost of using public transport in order to be effective. As the present research has indicated, the perceived difficulty of using public transport is also an important factor. Raising car-use costs will thus be insufficient unless changes are made to public transport services. A factor complicating this is activity patterns, which are often complex. As has been indicated in the present research, the more complex the activity pattern - the more the car is used as a means of transport.

Karlstad University. Faculty of Economic Sciences, Communication and IT. Psychology Karlstad University studies 2011:31 1403-8099

Karlstad, 32 s, 630 kB, 2011

ISBN: 978-91-7063-365-2

Index terms: Passenger, Commuter, Attitude (psychol), Attractiveness (transp), Improvement, Public transport, Stated preference
Ämnesord: Passagerare, Pendlare, Attityder, Attraktivitet (transporter), Förbättring, Kollektivtrafik, Stated preference
Extra ämnesord: Färdmedelsval

Cykelpuljen 2009-2011: status og udvalgte eksempler

http://www.vejdirektoratet.dk/DA/viden_og_data/publikationer/Lists/Publikationer/Attachments/137/cykelpuljen%202009-2011.pdf

I 2009 besluttede partierne bag aftalen om En grøn transportpolitik (Socialdemokraterne, Radikale Venstre, Socialistisk Folkeparti, Venstre, Dansk Folkeparti, Liberal Alliance og Det Konservative Folkeparti), at der skulle afsættes 1 mia. kr. i perioden 2009-2014 til en cykelpulje. Puljen skal muliggøre projekter, der kan forbedre forholdene for cyklister, så cyklen bliver en mere attraktiv, udbredt og sikker transportform til både pendling og fritid. Cykelpuljen anvendes dels til cykelprojekter på statsvejene dels til tilskud til projekter i kommuner, virksomheder og organisationer. Målet med denne status- og eksempelsamling er dels at give et overblik over anvendelsen af tilskudsdelen af Cykelpuljen dels at dokumentere nogle af de projekter, som har fået tilskud fra puljen. Det er vores håb, at projektbeskrivelserne kan inspirere andre til projekter og tiltag, som kan fremme cyklismen i deres område. Eksempelsamlingen består af 10 cases. Udvalget er foretaget, så de fleste af de projektemner, som har modtaget tilskud, er repræsenteret. Derfor er det også meget forskellige eksempler, som præsenteres - både indholdsmæssigt og størrelsesmæssigt. Det har imidlertid været sigtet med udvalget, at eksemplerne tilsammen skulle give et billede af, hvordan midlerne i Cykelpuljen bliver anvendt.

Vejdirektoratet

Köpenhamn, 31 s, 3,19 MB, 2012

ISBN: 978-87-7060-663-9

Index terms: Cycling, Increase, Method, Policy, Campaign, Case study, Mobility management
Ämnesord: Cykling, Ökning, Metoder, Policy, Kampanjer, Fallstudier, Mobility management

Förstudie mobility budgets : ett sätt att förändra incitamentsstrukturen för arbets- och tjänsteresor

http://www.energimyndigheten.se/Global/Forskning/Transport/F%c3%b6rstuideMobilityBudgets20120103.pdf

Förstudien över mobility budgets syftar till att undersöka hur det nederländska konceptet mobility budgets (mobilitetsbudgetar) används i Nederländerna för att påverka anställdas färdmedelsval samt hur det skulle kunna anpassas och utformas i en svensk kontext. Studien är indelad i tre delar där den första delen utgör en fallstudie över fem företag i Nederländerna, där fyra har tagit fram olika typer av mobilitetslösningar för sina anställda. Det femte företaget har tagit fram och säljer en lösning med ett kort som gäller som färdbevis och betalningsmedel på hyrbil, taxi, poolbil, tåg, kollektivtrafik, lånecyklar, infartsparkering, cykelparkering och temporära kontor, så kallad sömlös mobilitet (seamless mobility). Slutsatsen från den första delen av studien är att de budgetssystem som införts på nederländska företag främst ger effekt på företag med stor egen fordonsflotta och personal som reser mycket.

WSP Analys & Strategi

Stockholm, 40 s, 487,26 kB, 2011

Index terms: Journey to work, Mobility management, Method, Administration, Enterprise, Policy
Ämnesord: Arbetsresor, Mobility management, Metoder, Administration, Företag, Policy

MaxSumo: vägledning i planering, uppföljning och utvärdering av mobilitetsprojekt

Hyllenius, Pernilla; Smidfelt Rosqvist, Lena; Haustein, Sonja; Welsch, Janina; Carreno, Michael; Rye, Tom

http://www.trivector.se/fileadmin/uploads/Traffic/Rapporter/MaxSUMO_svensk_version.pdf

För alla som utförprojekt inom Mobility Management, är det av stort intresse att känna till och kunna visa att gjorda ansträngningar och investerade kostnader är motiverade och ger avsedd effekt . Ändå utvärderas många projekt inte alls. En uppenbar orsak är bristen på ett gemensamt, allmänt accepterat utvärderingsverktyg. MaxSumo, som är baserat på tidigare forskningsprojekt inom EU och på utvärderingsverktyget SUMO som ofta används i Sverige, är en systematisk metod för att utvärdera projekt inom Mobility Management. MaxSumo erbjuder en möjlighet att systematiskt och effektivt planera, följa upp och utvärdera mobilitetsprojekt och program som syftar till en beteendeförändring. MaxSumo omfattar utvärdering av såväl gjorda ansträngningar inom projektet och det mobilitetsbeteende projektet syftar till att ändra. MaxSumo kan användas för enskilda åtgärder, men även för plan och program där flera åtgärder kombinerats. På det här sättet, kan utvärderingsdata sammanställas på ett standardiserat sätt. Utvärdering med MaxSumo medger uppföljning av projektet både under och efter projektet, och erbjuder en möjlighet att jämföra olika projekt med varandra. På europeisk nivå kommer detta att ha positiv effekt på framtida arbete och kostnadsnyttobedömningar. Den unika fördelen med MaxSumo är att den ofta komplexa processen hos en beteendeförändring är indelad i mindre steg som kan följas upp och utvärderas successivt - analogt med att använda trappan nedför en hög byggnad istället för att hoppa från översta våningen. Därmed kan eventuella avvikelser korrigeras på ett tidigt stadium. Som följd av detta bygger MaxSumo på en idé om att mäta effekter på olika nivåer, kallade analysnivåer.. Analysnivåerna täcker hela processen från genomförda aktiviteter, kännedom, användning, och nöjdhet med de tillhandahållna mobilitetstjänsterna, följt av acceptans och test av ett mobilitetserbjudande (t ex ett nytt färdsätt) och slutligen effekter i form av nya antagna attityder och beteenden och dess systemeffekter. Analysnivåerna samordnas på ett systematiskt sätt, och medger successiv uppföljning av effekterna av projektet redan under genomförandet. MaxSumo bygger på vetskapen att beteendeförändring tar tid och att förändringen involverar en rad stadier som individen går igenom under förändringsprocessen. Uppföljning av denna process görs genom MaxSem (Max självregleringsmodell) som ingår i MaxSumo. Den teoretiska modellen i MaxSem är särskilt utformat för att förklara individers sätt att ändra beteende, och tillämpas med hjälp av en fråga som grupperar människor i olika stadier som avspeglar var de befinner sig i beteendeförändringen. MaxSumo ska - helst användas redan vid planeringsstadiet i början av ett projekt. Vid den här tidpunkten bör alla nödvändiga förberedelser för en effektiv utvärdering göras, vilket inkluderar att definiera övergripande syfte, målgrupper, de tjänster som ska tillhandahållas och det önskade nya beteendet. På alla nivåer måste användaren bestämma vad som ska mätas, vilka indikatorer som ska användas och hur man mäter dessa. Man kan också välja att hoppa över vissa nivåer - i vissa projekt är det varken möjligt eller nödvändigt att följa upp alla nivåer, vilket gör att utvärderingen kan göras så enkel som anses vara adekvat. Planeringsstadiet ger en Uppföljning och Utvärderings Plan (MEP) för det aktuella projektet, som sedan används för dess uppföljning och utvärdering. Användaren rekommenderas att använda MaxEva databas för dokumentation av det aktuella projektet. MaxEva ger möjlighet att dokumentera uppgifter och data från aktuellt projekt, att lära av varandras projekterfarenheter, och för att fördjupa kunskapen om effektiviteten hos olika mobilitetsprojekt. MaxSumo är främst ett verktyg för praktiker inom området Mobility Management. Användare av MaxSumo kan vara lokala mobilitetssamordnare, stads- eller trafikplanerare och deras konsulter, såväl som andra personer i organisationer som arbetar med att påverka mobilitetsbeteende, eller

personer som arbetar med MM i företag, skolor etc. Dessutom kan MaxSumo vara ett konstruktivt verktyg för forskare vid universitet och andra forskningsinstitutioner.

Sixth framework programme

Successful Travel Awareness Campaigns and Mobility Management Strategies Project no 518368

Trivector ILS

Lund, 60 s, 1,31 MB, 2011

Projektnamn: Successful Travel Awareness Campaigns and Mobility

Management Strategies. MAX

Index terms: Mobility management, Administration, Planning, Evaluation (assessment), Method
Ämnesord: Mobility management, Administration, Planering, Utvärdering, Metoder

Konsekvenser for individer og husholdninger av trafikkreduserende tiltak: kunnskap, kunnskapsmangler og forskningsbehov

Tennøy, Aud; Christiansen, Petter; Usterud Hanssen, Jan

https://www.toi.no/getfile.php/Publikasjoner/T%C3%98I%20rapporter/2012/1204-2012/1204-2012-elektronisk.pdf

Oppgaven i dette prosjektet var å beskrive kunnskap og kunnskapsmangler når det gjelder (negative) konsekvenser for individer og husholdninger av trafikkreduserende tiltak. Hovedkonklusjonen er at det finnes få studier som omhandler dette. Vi kan likevel slå fast at ulike trafikkreduserende tiltak har forskjellige slags effekter og konsekvenser for ulike grupper. Konsekvensene av å redusere bilbruken er gjerne større for personer som har bevegelseshemminger eller som bor i hushold med barn til og med skolepliktig alder. Tiltakene vil også ha størst konsekvenser for dem som bor i forsteder og spredtbygde strøk.

Transportøkonomsik institutt TØI rapport 1204/2012 0808-1190

Oslo, 41 s, 750,42 kB, 2012

ISBN: Pappersversion: 978-82-480-1347-1, Elektronisk

version: 978-82-480-1337-2

Projektnamn: BISEK

Index terms: Mobility management, Traffic restraint, Carfree, Impact study, Mobility (pers), Journey, Behaviour
Ämnesord: Mobility management, Trafikbegränsning, Bilfri, Effektstudier, Mobilitet, Resor, Beteende

Brugeres holdninger til elbiler: erfaringer fra tre forsøgsprojekter med elbiler: AErø elbilflåde, Move About og Prøv1Elbil

Kjaerulff, Aslak

http://orbit.dtu.dk/fedora/objects/orbit:90369/datastreams/file_6523987/content

DTU Transport. Institut for Transport Rapport 2 1601-9458

Lyngby, 35 s, 417,73 kB, 2011

ISBN: 978-87-7327-221-3

Index terms: Electric vehicle, Use, Attitude (psychol), Campaign
Ämnesord: Elfordon, Användning, Attityder, Kampanjer

ITS-stöd för miljövänlig körning: kartläggning och försök: slutrapport

Myhrberg, Stefan; Karlsson, Rune

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001201_001300/Publikation_001249/ITS-st%c3%b6d%20f%c3%b6r%20milj%c3%b6v%c3%a4nlig%20k%c3%b6rning%20-%20Slutrapport%20ver%201%200.pdf

Denna rapport utgör slutrapportering i projektet ”ITS-stöd för miljövänlig körning” som utförts under 2009-2010 med finansiering från Trafikverkets FUD-program. Projektet har utförts av Sweco och VTI. Projektets syfte har varit att öka kunskapen kring hur kända och nya ITS-tillämpningar kan bidra till minskade koldioxidutsläpp i samband med vägtrafik. Fokus ligger särskilt på stödsystem för miljövänlig körning. Målsättningen har varit att kunna värdera existerande produkter och satsningar inom området men även att föreslå framtida lösningar och insatser inom området.

SWECO

VTI

uo, 2,42 MB, 85 s, 2011

Index terms: Vehicle, Energy conservation, Intelligent transport system, Inventory, Driver assistance system, Energy consumption, Mathematical model, Calculation, Field (test), Measurement
Ämnesord: Fordon, Energihushållning, Intelligenta transportsystem, Inventering, Förarstödssystem, Energiförbrukning, Matematiska modeller, Beräkning, Fältförsök, Mätning

The influence of individuals' environmental attitudes and urban design features on their travel patterns in sustainable neighborhoods in the UK

Susilo, Yusak O; Williams, Katie; Lindsay, Morag; Dair, Carol

http://swopec.hhs.se/ctswps/abs/ctswps2012_001.htm

This paper explores the influence of individuals' environmental attitudes and urban design features on travel behavior, including mode choice. It uses data from residents of 13 new neighborhood UK developments designed to support sustainable travel. It is found that almost all respondents were concerned about environmental issues, but their views did not necessarily 'match' their travel behavior. Individuals' environmental concerns only had a strong relationship with walking within and near their neighborhood, but not with cycling or public transport use. Residents' car availability reduced public transport trips, walking and cycling. The influence of urban design features on travel behaviors was mixed, higher incidences of walking in denser, mixed and more permeable developments were not found and nor did residents own fewer cars than the population as a whole. Residents did, however, make more sustainable commuting trips than the population in general. Sustainable modes of travel were related to urban design features including secured bike storage, high connectivity of the neighborhoods to the nearby area, natural surveillance, high quality public realm and traffic calming. Likewise the provision of facilities within and nearby the development encouraged high levels of walking.

Centre for Transport Studies Stockholm Working papers in transport economics 2012:1

Swedish National Road & Transport Research Institute (VTI)

KTH Royal Institute of Technology

S-WoPEc, Scandinavian Working Papers in Economics

Stockholm, 464 kB, 13 s, 2012

Index terms: Journey, Behaviour, Attitude (psychol), Transport mode, Selection, Residential area, Urban area, Design (overall design), Sustainability, Walking, Cycling, Public transport, Car ownership, Questionnaire, Household
Ämnesord: Resor, Beteende, Attityder, Transportslag, Urval, Bostadsområden, Tätorter, Design, Hållbar utveckling, Gång, Cykling, Kollektivtrafik, Bilinnehav, Enkäter, Hushåll

Klimatsmart val av IT-stöd kan öka lönsamheten: kartläggning av uppföljningssystem och stöd för förare under färd

Silfver, Lotta; Backelin, David; Gorjifar, Shahriar

https://online4.ineko.se/trafikverket

Denna kartläggning ska ge åkerinäring och ägare till fordonsflottor en överblick över marknaden av system för mätning och uppföljning av fordons bränsleförbrukning med syfte att uppnå bränslebesparing och betydande minskning av koldioxidutsläppen.

Trafikverket Publikation 2012:048

Borlänge, 580 kB, 72 s, 2012

ISBN: 978-91-7467-248-0

Övrig info: Ersätter Trafikverket. Publikation 2010:076 med samma titel

Index terms: Fuel consumption, Decrease, Driver assistance system, Lorry, Equipment, Inventory
Ämnesord: Bränsleförbrukning, Minskning, Förarstödssystem, Lastbilar, Utrustning, Inventering

Eco-driving and use of regenerative electric brakes for the Green Train: the effect on travel time, energy consumption and brake wear

Sjöholm, Mikael

http://www.gronataget.se/upload/PublikaDokument/GT_Slutrapport_MikaelSjöholm.pdf

This study is a part of “Gröna Tåget” (Eng: “Green Train”) research and development programme that is preparing for new high-speed trains in Sweden. The purpose of this study is to investigate the effects of regenerative braking and eco-driving with regard to energy consumption and wear of the mechanical brakes as well as the possible economic benefits. New sophisticated “eco-driving” systems could help train drivers to run as energy efficient and economically as possible. Combined with powerful drive systems this could lead to more regenerated energy and reduced wear on mechanical brakes. The electric regenerative brakes can thus be used as normal service brake with minimum time loss. The first part of the study aims at developing a method to calculate wear on train brake pads. This is done by using a reformulated version of Archard’s wear equation with a temperature dependent wear coefficient and a temperature model to predict the brake pad temperature during braking. Generally the temperature dependence is found to be relatively low at normal operational braking. By performing simulations in the program STEC (Simulation of Train Energy Consumption), energy consumption for different cases of high-speed train operations is procured and significant data for the wear calculations are found. Simulations include both “normal driving techniques” and “eco-driving”. The driving styles were decided through interviews with train drivers and experts on energy optimized driving systems. The simulations show that more powerful drive systems reduce both energy consumption and travel time by permitting higher acceleration and energy regeneration. Also, with a high degree of electric regenerative braking, the wear of the mechanical brakes becomes lower.

Royal Institute of Technology. KTH Railway Group Publication 1101

Stockholm, 1,75 MB, 84 s, 2011

ISBN: 978-91-7501-070-0

Index terms: Train, High speed, Brake, Braking, Behaviour, Wear, Energy consumption, Journey time, Simulation, Calculation, Cost
Ämnesord: Tåg, Höghastighet, Bromsar, Bromsning, Beteende, Nötning, Energiförbrukning, Restid, Simulering, Beräkning, Kostnader

MOMO car-sharing: more options for energy efficient mobility through car-sharing

Der Senator für Umwelt, Bau und Verkehr /The Senator for Environment, Construction and Transport

Bremen, 1 DVD, 2011

Projektnamn: MOMO car-sharing (Intelligent Energy Europe, IEE project)

Index terms: Car sharing
Ämnesord: Bilpooler

Impact of Carsharing on Household Vehicle Holdings: Results from North American Shared-Use Vehicle Survey

Martin, Elliot; Shaheen, Susan A; Lidicker, Jeffrey

http://dx.doi.org/10.3141/2143-19

Carsharing has grown considerably in North America during the past decade and has flourished in metropolitan regions across the United States and Canada. The new transportation landscape offers urban residents an alternative to automobility, one without car ownership. As carsharing has expanded, there has been a growing demand to understand its environmental effects. This paper presents the results of a North American carsharing member survey (N = 6,281). A before-and-after analytical design is established with a focus on carsharing's effects on household vehicle holdings and the aggregate vehicle population. The results show that carsharing members reduce their vehicle holdings to a degree that is statistically significant. The average number of vehicles per household of the sample drops from 0.47 to 0.24. Most of this shift constitutes one-car households becoming carless. The average fuel economy of carsharing vehicles used most often by respondents is 10 mi/gal more efficient than the average vehicle shed by respondents. The median age of vehicles shed by carsharing households is 11 years, but the distribution covers a considerable range. An aggregate analysis suggests that carsharing has taken between 90,000 and 130,000 vehicles off the road. This equates to 9 to 13 vehicles (including shed autos and postponed auto purchases) taken off the road for each carsharing vehicle.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2143, s 150-158, 2010

ISBN: 9780309142908

Urban Structure and Socioeconomic Barriers to Consumer Adoption of Energy-Efficient Automobile Technology in a Dispersed City: Case Study of Brisbane, Australia

Dodson, Jago; Li, Terry; Sipe, Neil

http://dx.doi.org/10.3141/2157-14

The capacity for suburban households to respond to a changing global energy context by changing their motor vehicle technology is examined. Transforming transport systems will make up a crucial element in policy and planning responses to energy and climate challenges. Government policy appears focused on a transition to more-efficient vehicle types or alternative fuel and engine types. Yet such policies have failed to account for the considerable social differences in household exposure to the costs of transport energy and the adaptability of households in altering their use of modes and vehicle types. Nor do such policies recognize how urban social structure, household social status, and automobile type intersect spatially within Australian cities. The links between urban social structure and composition of the motor vehicle fleet are examined to test whether the households that are most reliant on motor vehicles for transport have the financial capacity to rapidly alter their vehicle technology in response to changing energy prices and supply conditions. Australian Bureau of Statistics census data and motor vehicle registration data at the postcode level are used to compare socioeconomic status with the age, fuel consumption, and value of the suburban vehicle fleet for the Brisbane and South East Queensland regions of Australia. This spatial deployment of census and vehicle registration data is novel in the Australian context. It is argued that policies that focus on vehicle technology alone face a number of social equity hurdles as measures to overcome urban transport fuel security problems.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2157, s 111-118, 2010

ISBN: 9780309142830

Built Environment and School Travel Mode Choice in Toronto, Canada

Mitra, Raktim; Buliung, Ron N; Roorda, Matthew J

http://dx.doi.org/10.3141/2156-17

Walking to or from school may provide a regular source of physical activity for children and youth. To improve walking practices among this younger population, urban planners emphasize the importance of built environment interventions. Empirical understanding of the potential relationship between the built environment and active school transportation (e.g., walking) is therefore essential to the development of effective planning interventions. In the nexus of empiricism and policy, place-based differences in school transport policy and urbanization processes, which may associate with mode choice, provide the rationale for conducting local research to support local policy development. This study examines the association between the built environment and the likelihood of walking or being driven to or from school. The research also addresses differences in mode choice behavior across morning and afternoon school trips. Binomial logit models were specified to study the school travel outcomes of children aged 11 to 13 years in the city of Toronto, Canada. Distance between the residence and school had the strongest correlation with mode choice; other built environment measures had moderate associations with walking. Importantly, the built environment around a child's residence had a stronger association with mode choice than did the built environment around the school. Furthermore, the effect of the built environment was more apparent for home-to-school trips. This research provides evidence that the built environment may influence school travel mode choice, but planners and community-based organizations should exercise caution when the nature of interventions required to encourage walking among children is determined.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2156, s 150-159, 2010

ISBN: 9780309142915

Energy efficiency versus gains in consumer amenities: examples from passenger cars and the Swedish building sector

Sprei, Frances

This thesis, consisting of five papers, addresses the question of what share of technological development results in increased energy efficiency rather than offsetting improved consumer services in the form of gains in consumer amenities? In the first paper economic and organizational explanations are given for stagnating energy efficiency trends in the Swedish residential building sector. The results show that changes in energy prices to a large extent explain the observed stagnation. We also find potential organizational barriers and weaknesses in the learning process. The four other papers analyze trends in new cars sold in Sweden between 1985 and 2007. In Paper II and IV the interactions between service features, technological development and fuel consumption are analyzed for 1985-2002 (Paper II) and 2002-2007 (Paper IV). Car parameters connected to service features, such as passenger space, acceleration capacity, weight and maximum power continue to increase during both time periods. The implication is that between 1985 and 2002 65 % of the enhanced technology and design served to meet consumer amenities such as increased passenger space and improved acceleration. The remaining 35 % resulted in a net reduction in specific fuel consumption. For the following five years the relationship had seemingly shifted, however, had there not been an increased share of diesel cars the offset would have been 70 %. Paper III studies a possible downsizing of the Swedish new car fleet between 1985 and 2002, both from a market perspective, i.e., shifting to smaller less powerful cars, and technological, i.e., the use of technologies that enable smaller engines. The study finds few signs of a downsizing. From a market perspective larger cars are still dominant and the technical potentials to reduce engine size have not been fully harnessed. The fifth paper studies the decision process behind purchasing a new car through qualitative interviews with key stakeholders. The main result is that there has been a shift in the market toward increased environmental awareness. This does not always mean that criteria such as roominess and engine power are reconsidered. The environmental criterion is instead addressed by shifting fuels to diesel or ethanol. Concluding, the reduction of specific fuel consumption in the Swedish new car fleet is not due to a shift in trends away from improved service features, such as large vehicles with faster acceleration, but rather a shift in fuel type. This implies that a major part of the technological development continues to result in gains in consumer amenities rather than increased energy efficiency.

Chalmers University of Technology. Department of Energy and Environment. Physical Resource Theory Doktorsavhandlingar vid Chalmers tekniska högskola. Ny serie 3099 0346-718X

Göteborg, 60 s + bil (72 s), 2010

ISBN: 978-91-7385-418-4

Index terms: Car ownership, Fleet of vehicles, Car, Size, Decrease, Fuel consumption, Technology, Turbocharged, Emission control, Household, Choice, Thesis
Ämnesord: Bilinnehav, Fordonspark, Bilar, Storlek, Minskning, Bränsleförbrukning, Teknologi, Turbomotorer, Emissionskontroll, Hushåll, Val, Doktorsavhandling

Ekonomiska styrmedel i transportpolitiken: utveckling av samband mellan styrmedel och transportpolitiska mål

Karlsson, Marie

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001201_001300/Publikation_001251/Rapport_Ekonomiska%20styrmedel%20i%20transportpolitiken_ver1%200.pdf

För att kunna uppnå ställda mål inom transportpolitiken är åtgärder och satsningar inom flera olika områden nödvändiga och styrmedel kommer att vara avgörande för att åstadkomma ett effektivt och hållbart transportsystem. Denna studie utgår från grundantagandet att införandet av informations- och kommunikationsteknik i transportsystemet möjliggör smartare lösningar som kan bidra till transportpolitisk måluppfyllnad.; Utgångspunkten är Trafikverkets plan för utveckling 2010-2012 och syftet är att öka kunskapen om sambanden mellan styrmedel och transportpolitisk måluppfyllnad. Detta innebär att kunskap behöver utvecklas även för sambanden mellan det beteende som påverkas av ett styrmedel och egenskaper hos transporten (parametrar) som ger upphov till externa effekter vilka sin tur påverkar det transportpolitiska målet.

Sweco Infrastructure AB

Stockholm, 2,06 MB, 65 s, 2010

Index terms: External effect, Road pricing, Tax, Subsidy, Impact study, Safety, Accessibility, Impact study (environment), Transport
Ämnesord: Externa effekter, Vägavgifter, Skatter, Subventioner, Effektstudier, Säkerhet, Tillgänglighet, Miljöpåverkan, Transporter

Transport demand management in Reykjavik: a study of potential measures

Thorkelsdottir, Margret Silja

http://www.tft.lth.se/fileadmin/tft/dok/publ/5000/Thesis214_MST_scr.pdf

The aim of the thesis is to study potential measures within transport demand management to minimise the dominance of the private car in Reykjavik, Iceland. Firstly, facts are brought about to identify the problems of the system, secondly, a number of relatively cheap and simple measures are studied and. finally, a plan of measures is suggested aimed at increasing the sustainability of Reykjavik's transport system. The study is mainly carried out through a literature study, supported by a number of case studies, mapping of problems and discussions. The results show shocking numbers for car ownership, enormous supply of car parking free of charge and inefficient travel patterns. There is a great potential to implement many of the measures suggested. of which many are unexplored in Iceland, to reach a more balanced modal split and encourage the individual to contribute. The measures are among other things intended to minimise and make private car traffic more efficient, promote more environmentally friendly modes of transport, bring about economic savings and contribute to improved private and public health. In addition, the significance of improved cooperation between neighbouring municipalities, which all together form the coherent metropolitan area of Reykjavik, is addressed.; Summarizing article: http://www.tft.lth.se/fileadmin/tft/dok/publ/Artiklar/artikel_MST_214.pdf

Lunds universitet. Tekniska högskolan. Teknik och samhälle. Trafik och väg. Thesis 214

Lund, 89 s + bil. (13 s), 2,23 MB, 2011

Index terms: Mobility management, Parking pricing, Car sharing, Public transport, Cycling, Walking, Education
Ämnesord: Mobility management, Parkeringsavgifter, Bilpooler, Kollektivtrafik, Cykling, Gång, Utbildning

Hur får vi människor att lämna bilen hemma?

Johnsson, Lisa; Bäckman, Jennie; Sanden, Bodil

http://fudinfo.trafikverket.se/fudinfoexternwebb/Publikationer/Publikationer_001201_001300/Publikation_001259/RapportL%c3%a4mnabilenhemma.pdf

Syftet med denna studie är att få en ökad förståelse för vad som krävs för att få fler människor att lämna bilen hemma och istället resa med tåg och övrig kollektivtrafik. Tjugoen bilpendlare från Mälardalen rekryterades till att under fyra dagar dokumentera sina resor med bil och kollektivtrafik. Studien visar på att resenärernas resor är komplexa och innehåller ett flertal aspekter som är viktiga för kollektivtrafiken att känna till. Resenärerna i studien ser inte sin tågresa som en potentiell arbetsplats, det finns en oro för att ställa sin bil på en infartsparkering och en okunskap om kollektivtrafikresor. För att hjälpa dessa resenärer och andra att ha möjlighet att åka kollektivt i högre utsträckning krävs åtgärder på flera nivåer där kommunikation om realtidsinformation, biljetter, komfort och arbetsmiljö på tåget är viktiga ingredienser. För att öka användbarheten i kollektivtrafiken anser deltagarna i studien att det krävs att man får sitta på tågen, utökade resmöjligheter på kvällar och mornar, högre tillförlitlighet. Lyckas kollektivtrafiken reducera resenärers osäkerhet inför sin kollektivtrafikresa kommer troligtvis fler att se det som ett alternativ till bilen. Arbetsgivarens roll behöver också bli tydligare för att pendlaren ska se med nya ögon på sitt arbete, sina resor och möjligheter till förändring.

WSP Sverige AB. Analys & Strategi

Stockholm, 1,15 MB, 45 s, 2010

Index terms: Journey to work, Car, Driver, Attitude (psychol), Questionnaire, Mobility management
Ämnesord: Arbetsresor, Bilar, Förare, Attityder, Enkäter, Mobility management
Extra ämnesord: Färdmedelsval

Färdmedelsval mellan Södra Sandby och Lund : ändringar i färdmedelsval hos invånare i Södra Sandby efter Lunds kommuns satsningar med LundaMaTs I

Hallgrimsdottir, Berglind

http://www.tft.lth.se/fileadmin/tft/dok/publ/5000/thesis203_BH_webb_scr.pdf

De senaste decennierna har en förbättrad privat ekonomi gjort det möjligt för allt fler hushåll att ha tillgång till egen bil. Samhällsstrukturen har anpassats till den ökade bilismen. I nuläget har man, med mer kunskap om miljö- och klimatförändringar, börjat fokusera mer på ett hållbart transportsystem. Lunds kommun har sedan 1998 arbetat mot ett hållbart transportsystem med projekten LundaMaTs och LundaMaTs II. När projektet LundaMaTs utfördes bestämdes det av kommunen att ha S.Sandby som ett pilotort där ett antal aktiviteter utfördes samt trafikmätningar för cykel-, kollektiv- och biltrafiken. Arbetets syfte var genom att använda dessa trafikräkningar och två resvaneundersökningar se om det har varit någon ändring vad gäller färdmedelsvalet mellan S.Sandby och Lund. Resultaten pekar på att Lundalänken har inneburit i färdmedelsvalet vad gäller arbets- och utbildningsresor, men alla resultat pekar på att invånarna reser mer oavsett färdmedel. Det finns ingen klar övergång från ett färdmedel till det andra. Cykeltrafiken ökar, biltrafiken ökar och antal resenärer i busstrafiken ökar. Den positiva utvecklingen är dock att biltrafiken har slutat öka.

Lunds universitet. Tekniska högskolan. Teknik och samhälle. Trafik och väg. Thesis 203

Lund, 68 s, 2,28 MB, 2010

Index terms: Mobility management, Modal choice, Cycling, Public transport

Tema miljörisker: miljörisker och trafikanters beteenden

Eriksson, Louise; Nerhagen, Lena; Bolling, Anne; Jansson, Jonas; Hjort, Mattias; Nilsson, Lena; Gustafsson, Mats; Blomqvist, Göran; Karlsson, Bo O

http://www.vti.se/sv/publikationer/pdf/tema-miljorisker--miljorisker-och-trafikanters-beteenden.pdf

This report compiles the results from the project Theme Environmental risks. More specifically, the project concerned how different transport related environmental risks influence different road users and how their behaviour influence the environment. The project aimed at preparing for interdisciplinary research about environmental risks at VTI. The project was divided into three parts. The first subproject aimed at compiling literature about transport related environmental risks from psychological and economic perspectives, and in the second subproject a willingness to pay study was outlined where both economic and psychological principles were considered. In the third subproject, a simulator study was outlined. The focus was to study environmental effects of driving under controlled circumstances in the driving simulator. The report is divided into two parts. In part 1, the results from the literature review and the proposal for a willingness to pay study are described (subproject 1 and 2). This part is written in English. Part 2 contains a project outline for a simulator study in the form of an research project application (project 3). This part is written in Swedish.

VTI notat 9-2011

Linköping, 57 s, 786 kB, 2011

Index terms: Emission control, Environment protection, Fuel consumption, Driver, Road user, Behaviour, Attitude (psychol), Risk, Perception, Psychological aspects
Ämnesord: Emissionskontroll, Miljöskydd, Bränsleförbrukning, Förare, Trafikanter, Beteende, Attityder, Risk, Perception, Psykologiska aspekter

Att ta kontroll över resandet: travel management och tjänsteresor med tåg

Gustafson, Per; Bergström Casinowsky, Gunilla

http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-131600

Over the past few decades, business travel has increased substantially, with both individual and organizational consequences. Many large companies and public authorities therefor attempt to implement policies, regulations and standardized routines for their travel. The concept of travel management describes such activities pursued on a professional basis, by employed travel managers. The purpose of this report is to investigate travel management in Sweden and, in particular, to examine business travel by train in relation to professional travel management. The report mainly draws on interviews with travel managers, but empirical data also include interviews with sales personnel at travel agencies and at SJ (the state-owned Swedish railway company), interviews with frequent business travellers, and travel policy documents. To begin with, six important tasks for travel managers are identified: 1) developing and implementing a travel policy, 2) cooperating with a travel agency, 3) making agreements with suppliers, 4) creating standardized payment routines, 5) collecting and analyzing travel statistics, and 6) communicating and gaining support within the the organization. These different tasks are then described and analyzed in some detail, and specific attention is given to how the railway as a transport system works in relation to the practice of travel management. Moreover, two separate chapters in the report examine business travel by train from the travellers' perspective and how environmental considerations in travel management may promote travel by train.

Uppsala universitet. Institutet för bostads- och urbanforskning Forskningsrapport / Research report, 2010:1 1401-0933

Gävle, 1,51 MB, 146 s, 2010

Index terms: Journey, Work, Policy, Enterprise, Management, Rail bound transport
Ämnesord: Resor, Arbete, Policy, Företag, Ledning och organisation, Järnvägstransporter

Understanding why some people do not use buses

Dobbie, Fiona; McConville, Susan; Ormston, Rachel

http://www.scotland.gov.uk/Resource/Doc/310263/0097941.pdf

The Scottish Government commissioned this research to explore in depth the reasons why some people do not use buses and what might encourage them to do so. While there is considerable existing research on bus travel in Scotland, much of this to date has been quantitative, relying on survey data. Although very useful in measuring use of buses and other modes, survey data can be limited in the level of detail it can provide on why people use particular modes rather than others. This research was intended to address that gap. Buses are the most commonly used form of public transport in the UK. In Scotland, there were 513 million passenger journeys on local bus services in 2007-08.1 However, while the number of passenger journeys by bus has risen slightly in Scotland since 1998-99, this follows a period of steep and steady decline in bus passengers since the mid-1970s. At the same time, car use in Scotland has increased massively. The Scottish Government has identified that buses have an important role to play in delivering its central purpose of sustainable economic growth, and the strategic objectives of making Scotland fairer, healthier and greener, encouraging communities to flourish and extending opportunities for people to succeed (Scottish Government, 2008a). Buses are expected to play a key role in meeting the objectives of Scotland's National Transport Strategy (Scottish Executive, 2006a) in relation to improving journey times and connections, reducing emission and improving the quality, accessibility and affordability of public transport.

Scottish Government Social Research. Scottish Center for Social Research

Edinburgh, 99 s, 432,66 kB, 2010

ISBN: 9780755992935

Index terms: Journey, Behaviour, Attitude (psychol), Bus, Public transport, Interview
Ämnesord: Resor, Beteende, Attityder, Bussar, Kollektivtrafik, Intervjuer
Extra ämnesord: Färdmedelsval

En analys av åtgärdsprogram genomförda i Sverige för att minska privatbilismen

Friman, Margareta; Larhult, Lina; Gärling, Tommy

http://urn.kb.se/resolve?urn=urn:nbn:se:kau:diva-5378

Utvärderingar som genomförts i många länder visar att mjuka policyåtgärder i form av personlig reseplanering minskar privatbilismen och ökar kollektivåkandet. Sverige har en gles befolkning och därmed dåligt underlag för kollektivtrafik, långa resavstånd, kallt klimat och en hög täthet av personbilar, varför mjuka policyåtgärder genomförda i Sverige troligen är mindre kostnadseffektiva än man funnit i andra länder. Trettiotvå svenska åtgärdsprogram som använt personlig reseplanering; analyserades med avseende på huvudmannaskap, geografiskt tillämpningsområde, målgrupp, val av tekniker för påverkan samt effekter på bilresande och val av alternativa färdmedel. Inga utvärderingar av åtgärdsprogrammen uppfyllde de metodiska krav som måste ställas på sådana utvärderingar avseende uppläggning och effektmätning. Rapporteringen var dessutom dels bristfällig, dels inte heller standardiserad på det sätt som är önskvärt för att jämförande analyser skall kunna göras. Med reservation för de nämnda bristerna konstateras ändå att positiva effekter i nivå med utländska; utvärderingar har erhållits i flera av åtgärdsprogrammen. Ytterligare utvärderingar av bättre kvalitet är dock nödvändiga. Vilka krav på dessa som därvid måste ställas definieras.

Karlstads universitet. Fakulteten för ekonomi, kommunikation och IT. SAMOT. Karlstad University Studies 2010:9

Karlstad, 32 s, 288,71 kB, 2010

ISBN: 9789170632945

Index terms: Mobility management, Campaign, Method, Evaluation (assessment)
Ämnesord: Mobility management, Kampanjer, Metoder, Utvärdering

Klimatsmart val av IT-stöd kan öka lönsamheten: kartläggning av uppföljningssystem och stöd för förare under färd

Silfver, Lotta; Backelin, David; Gorjifar, Shahriar

https://online4.ineko.se/trafikverket

Denna kartläggning ska ge åkerinäring och ägare till fordonsflottor en överblick över marknaden av system för mätning och uppföljning av fordons bränsleförbrukning med syfte att uppnå bränslebesparing och betydande minskning av koldioxidutsläppen.

Trafikverket Publikation 2012:048

Borlänge, 580 kB, 72 s, 2012

ISBN: 978-91-7467-248-0

Övrig info: Ersätter Trafikverket. Publikation 2010:076 med samma titel

Index terms: Fuel consumption, Decrease, Driver assistance system, Lorry, Equipment, Inventory
Ämnesord: Bränsleförbrukning, Minskning, Förarstödssystem, Lastbilar, Utrustning, Inventering

Hållbart resande i praktiken: trafik- och stadsplanering med beteendepåverkan i fokus

Forsell, Lena; Grahn, Karin; Gustafsson, Ninnie; Håkansson, Madelene; Ljungberg, Christer; Neergaard, Karin; Rosenlind, Helena; Schelin, Jannica; Schnabel, Christine; Wall, Krister; Wendle, Björn

http://www.trafikverket.se/PageFiles/16239/hallbart_resande_i_praktiken.pdf

En idéskrift som ska inspirera till nya tanke- och arbetssätt som främjar en integrering av hållbart resande/mobility management i; trafik- och samhällsplaneringen och skapandet av ett hållbart transportsystem. Skriften är en fördjupning av handboken TRAST (Trafik för en attraktiv stad).

SKL Kommentus Media

Sveriges Kommuner och Landsting

Trafikverket

Stockholm, 36 s, 840 kB, 2010

ISBN: 978-91-7345-250-2

Projektnamn: Projekt: Den Goda Staden

Index terms: Mobility management, Sustainability, Journey, Traffic, Town planning, Local authority, Planning, Management
Ämnesord: Mobility management, Hållbar utveckling, Resor, Trafik, Stadsplanering, Kommunalförvaltning, Planering, Ledning och organisation

Traveler response to transportation system changes: chapter 19 - employer and institutional TDM strategies

Kuzmyak, J Richard; Evans, John E (Jay) IV; Pratt, Richard H

http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c19.pdf

The report pair-uses wise comparisons to explore the relative importance of particular categories of TDM strategies, such as support versus incentives, as well as the particular strategies themselves, such as transit subsidy versus a high-occupancy vehicle parking discount. TDM (transportation demand management or travel demand management) is a process that can encompass a variety of measures intended to influence travel choices. TDM is used to manage heavy traffic demand and parking requirements, and to enhance the effectiveness of transit services. This report is part of TCRP's Traveler Response to Transportation System Changes Handbook series. The overarching objective of the Traveler Response to Transportation System Changes Handbook is to equip members of the transportation profession with a comprehensive, readily accessible, interpretive documentation of results and experience obtained across the United States and elsewhere from (1) different types of transportation system changes and policy actions and (2) alternative land use and site development design approaches. The Handbook, organized for simultaneous print and electronic chapter-by-chapter publication, treats each chapter essentially as a stand-alone document. Each chapter includes text and self-contained references and sources on that topic. The Handbook user should, however, be conversant with the background and guidance provided in TCRP Report 95: Chapter 1, Introduction. Upon completion of the Report 95 series, the final Chapter 1 publication will include a CD-ROM of all 19 chapters.

Transit Cooperative Research Program. TCRP report 95

Washington DC, 173 s, 3,31 MB, 2010

ISBN: 9780309118361

Index terms: Mobility management, Journey to work, Personnel, Enterprise, Policy

The challenge and adoption of green initiatives for transport and logistics service providers

Isaksson, Karin; Björklund, Maria; Evangelista, Pietro

http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-73681

The role of logistics service providers (LSPs) has started to change both when it comes to content and complexity and LSPs have been identified to have potential to become more value-adding actors in supply chains. This applies when LSPs begin to transform their operations and strategy to become more effective from a green perspective. In response, the purpose of this paper is to develop a base for further investigations of green initiatives carried out by LSPs and analyse if the green initiatives implemented are dependent on firm characteristics of the LSPs, as well as drivers and barriers experienced. Research approach: A questionnaire survey has been launched and it is still ongoing. The survey investigates a sample of LSPs operating on the Swedish and the Italian market. The questionnaire is derived from the researchers' earlier research projects based on case studies and literature reviews. Data and information collected through the questionnaire allow identifying current and future green initiatives, influencing factors (drivers and barriers) and firm characteristics. The analysis suggests how these dimensions depend on each other.; Findings and Originality: The survey is still ongoing and the paper will present the first results of the research. The first results discern different green initiatives and the type of drivers and barriers affecting these companies. Prior research has focused on the perspective of the buyer of green logistics services and little attention has been paid to the role of green initiatives in the strategy of LSPs, their impact on customer relationship and performance, the role of ICT as well as drivers and barriers affecting such initiatives.; Research impact: The expected contribution of this paper is to illustrate and give a deeper knowledge of how LSPs respond to changing market conditions when it comes to green pressures from society. This study may provide a broad base for further research on LSPs' continued strategy development and adaption to future green requirements both from customers and government.; Practical impact: The paper will describe the way LSPs have started to adopt and manage green initiatives into their operations. Furthermore, the study will also provide a deeper understanding among practitioners of how logistics green services can be approached and also what drives and inhibits that process., 10 s, 219,71 kB, 2011

ISBN: 978-1-904564-36-2

Övrig info: Ingår i: Proceedings of the 16th annual Logistics Research

Network conference: smarter logistics: innovation for

efficiency, performance and austerity, 7-9 September,

Southampton, United Kingdom, 2011

Index terms: Logistics, Freight transport, Organization (association), Sustainability, Environment protection, Questionnaire
Ämnesord: Logistik, Godstransporter, Organisationer, Hållbar utveckling, Miljöskydd, Enkäter

Policy options for reducing energy use and greenhouse gas emissions from U.S. transportation

http://onlinepubs.trb.org/onlinepubs/sr/sr307.pdf

This report examines the potential for policies to yield major changes in transportation energy use and emissions trends by policy measures targeting cars and light trucks, medium and heavy trucks, and commercial airliners. These three modes are by far the largest users of energy by U.S. transportation because they account for the vast majority of passenger trips and freight.; According to the committee that produced the report, it will take more than tougher fuel economy standards for U.S. transportation to significantly cut national petroleum use over the next half century. It will likely require a combination of measures that foster consumer and supplier interest in vehicle fuel economy, alternative fuels, and a more efficient transportation system.; Major policy options examined in the report—fuel taxes, vehicle efficiency standards, fuel standards, infrastructure investments, and coordinated transportation and land use planning—have the potential to bring about large energy and emissions savings from these modes over time; however, each option presents particular challenges with respect to the scope and timing of its impacts. The report suggests that combining transportation policy options to increase the timeliness and expand the scale and scope of the response may be warranted.; Saving energy in transportation can have important implications for the cost of securing the world's oil supplies, since transportation accounts for most of the petroleum consumed in the United States. It can also help with controlling the buildup of greenhouse gases (GHGs), which will require major reductions in carbon dioxide (CO2) emissions from economic sectors that are heavy users of carbon-rich fossil fuels. Scientific analyses and models indicate a need to stabilize atmospheric concentrations of CO2 and other GHGs by the middle of this century to reduce the risks of climate change. A response by the transportation sector to this energy and emissions challenge will be important because it produces between one-quarter and one-third of all of the CO2 emitted from the country's energy consumption.

Transportation Research Board. Special report 307 0360-859X

Washington DC, 208 s, 2,51 MB, 2011

ISBN: 978-0-309-16742-0

Index terms: Emission, Emission control, Energy conservation, Method, Policy, Tax, Greenhouse gas, Sustainability
Ämnesord: Emissioner, Emissionskontroll, Energihushållning, Metoder, Policy, Skatter, Växthusgaser, Hållbar utveckling

Med klimatet i tankarna: styrmedel för energieffektiva bilar

Kågeson, Per

http://www.ems.expertgrupp.se/Uploads/Documents/Hela_2011_1_till_webben.pdf

Inom EU är styrningen mot klimatanpassade bilar långt ifrån likformig. Detta skapar stora problem för bilindustrin och fördyrar den genomsnittliga bilen. Frågan om en samhällsekonomiskt effektiv reglering hamnar därför delvis i skuggan av brister i samordning mellan de olika ländernas regelverk. Det finns likväl ett stort behov av en allmän uppslutning kring hur en effektiv reglering bör ser ut. Finns det motiv för fler styrmedel än generella skatter på koldioxid eller handel med utsläppsrätter? I en rapport till EMS diskuterar professor Per Kågeson behovet av kompletterande åtgärder och kartlägger dagens regelverk. Rapporten skisserar även hur en långsiktigt hållbar incitamentsstruktur som passar svenska förhållanden kan se ut samt studerar förutsättningarna för att etablera en gemensam europeisk regleringsmodell.

Finansdepartementet.

Rapport till Expertgruppen för miljöstudier 2011:1

Stockholm, 133 s, 2 MB, 2011

Index terms: Carbon dioxide, Greenhouse gas, Emission control, Tax, Legislation, Policy, Alternative energy, Fuel, Fleet of vehicles
Ämnesord: Koldioxid, Växthusgaser, Emissionskontroll, Skatter, Lagstiftning, Policy, Förnybara energikällor, Bränsle, Fordonspark

E-handelns roll och potential för ett mer energieffektivt och hållbart transportsystem

Smidfelt Rosqvist, Lena; Hiselius, Lena; Clark, Anna; Adell, Emeli; Indebetou, Lovisa

http://www.trivector.se/fileadmin/uploads/Traffic/Rapporter/2013_06_Energimyndigheten_Potential_E-handel_2013-06-28.pdf

Den snabbt växande e-handeln påverkar våra köpvanor samt våra resvanor. Under 2010 initierade Trafik och väg vid LTH och Trivector Traffic tillsammans denna forskning om effekterna och hållbarhetspotentialen av online shopping avseende transporter. Den svenska Energimyndigheten godkände vårt förslag och projektet inleddes 2011. Projektet har genomförts i nära anslutning till forskningsprogrammet Lets2050 vilket omfattar cirka 25 forskare från ett antal institutioner vid Lunds universitet. Lets2050 finansieras gemensamt av Naturvårdsverket, Energimyndigheten, Vinnova och Trafikverket. Lets2050 forskningsuppdrag är att identifiera, undersöka och föreslå sätt som kan styra Sverige att nå ett koldioxidsnålt energi-och transportsystem till 2050. I delområdet Gods har forskningen varit inriktad på logistik och godstransporter. Här har också det ömsesidiga beroendet mellan gods-och persontransporter undersökts med speciellt fokus på e-handel och dess konsekvenser. I denna rapport presenteras det arbete som utförts i projektet som finansieras av Energimyndigheten, som består av en unik empirisk datainsamling och analys av den roll som e-handel kan ha på potentialen för ett mer hållbart transportsystem.

Trivector Traffic Rapport 2013:06

Lund, 80 s, 1,75 MB, 2013

Index terms: E commerce, Journey, Emission, Carbon dioxide
Ämnesord: Elektronisk handel, Resor, Emissioner, Koldioxid

GPS navigering för bil - funktion och användning: sparar man bränsle genom att navigera med GPS?

Ericsson, Eva; Larsson, Hanna

http://fudinfo.trafikverket.se/fudinfoexternwebb/Pages/PublikationVisa.aspx?PublikationId=2001

Tidigare studier visar att det finns potential för bränslebesparing för ändrat körsätt. I körsättet brukar inkluderas hur föraren givet den yttre körsituationen väljer hastighet, accelererar, bromsar och växlar bilen. Körsättet är i hög grad kopplat till den yttre miljön, olika vägar har olika typisk bränsleförbrukning per körd kilometer baserat på vägens funktion och utformning samt vilka trafikförhållanden som råder. Detta projekt syftar till att testa om dagens navigeringshjälpmedel kan ge ett stöd till föraren att göra ett bränslesnålt ruttval. Denna studie hade från början syftet att skapa en prototyp för energieffektiv navigering genom att modifiera ett befintligt navigeringssystem, testa prototypen i verklig trafik med tillämpning på lätta fordon i yrkestrafik och utvärdera systemet med avseende på funktion och acceptans hos förarna. På grund av svårigheter att hitta samarbetspartners från navigeringsföretag ändrades syftet i samråd med beställaren. Den nya inriktningen syftade till att genomföra en jämförande analys avseende funktionen för bränslesnålt vägval hos ett par befintliga navigeringssystem. Kan man spara bränsle genom att välja ”rätt” optimeringsinställning i navigatorn? Vidare att genomföra en undersökning kring användandet av navigeringssystem vid bilkörning ser ut idag med särskilt fokus på hur användare ser på eventuella möjligheter att använda ett bränslesnålt vägval.

WSP Analys & Strategi

Stockholm, 77 s, 2013

Index terms: Global positioning system, Driver assistance system, Navigation (route), Fuel consumption, Driver, Behaviour, Choice, Questionnaire
Ämnesord: Förarstödssystem, Navigation, Bränsleförbrukning, Förare, Beteende, Val, Enkäter

Ecodriving på SJ: förarperspektiv på tekniska hjälpmedel för beslutsfattande och utbildning i Ecodriving

Abadir Guirgis, Georg

http://www.vti.se/sv/publikationer/pdf/ecodriving-pa-sj-forarperspektiv-pa-tekniska-hjalpmedel-for-beslutsfattande-och-utbildning-i-ecodriving.pdf

Trots att samtliga resor med SJs tåg i Sverige är märkta med Bra Miljöval skärps kraven på minskade utsläpp och energianvändning efter hand, varför SJ ständigt måste utveckla sin miljöprofil. På SJ har man därför arbetat fram en utbildning i energieffektiv körning (Ecodriving) samt låtit vissa av sina förare använda ett tekniskt hjälpmedel som stödjer detta, för att påvisa möjligheten till energibesparingar. Denna rapport tar upp två studier vilka är SJs försöksverksamhet inklusive en kritisk granskning av denna samt en kompletterande studie i form av observationer av utbildning i Ecodriving och intervjuer med förare. Resultaten av SJs försöksverksamhet är värdefulla och talar för att energibesparingar är genomförbara. Samtidigt så finns det en hel del osäkerhet i de energimätningsdata som samlats in varför det är svårt att dra några definitiva slutsatser. Resultatet av intervjuerna med förarna talar för att det finns en hel del oklarheter kring vilka risker och konsekvenser ett framtida införande av det tekniska hjälpmedlet för Ecodriving faktiskt innebär. Sammantaget finns anledning att genomföra fortsatta studier av hur man på bästa sätt kan införa energieffektiv körning av spårtrafik i sin helhet.

VTI notat 26-2013

Linköping, 37 s, 1,09 MB, 2013

Index terms: Train driver, Driving (veh), Energy conservation, Energy consumption, Dashboard, Education, Attitude (psychol), Interview, Observation
Ämnesord: Lokförare, Fordonskörning, Energihushållning, Energiförbrukning, Instrumentbrädor, Utbildning, Attityder, Intervjuer, Observation

Lådcyklar och bilfria vardagsliv

Börjesson Rivera, Miriam; Henriksson, Greger; Liljenström, Carolina

http://kth.diva-portal.org/smash/get/diva2:707997/FULLTEXT01.pdf

För att skapa en miljömässigt hållbar stad behöver människorna i den ha anledning och möjlighet att anpassa sina vardagliga vanor i linje med stadens hållbara utveckling. I denna rapport behandlas vanor i form av vardagliga resor och transporter, t ex inköp av dagligvaror. Mer specifikt har undersökts hur tillgång till ett lådcykelsystem skulle kunna bidra till möjligheter att leva bilfria liv. Studien ingick som del av det större projektet Innovativ Parkering för klimatsmarta städer. De boende i en bostadsrättsförening i Bagarmossen, en av Stockholms södra förorter, fick tillgång till en lådcykelpool, d v s tre så kallade lådcyklar (lastcyklar med tre hjul och stor låda) som de fick boka och använda som de ville april-november 2013. Vi frågade oss på vilket sätt tillgången till lådcykelpoolen påverkade de boendes rese- och transportvanor i vardagen. Den kvantitativa delen av studien visade att nästan 20 % av hushållen bokade cyklarna en eller fler gånger och 5 % av hushållen använde cyklarna 10 gånger eller fler under försökets period. Gemensamt för de som använt cyklarna flitigt har, enligt de kvalitativa intervjuerna, varit en vilja att leva ett bilfritt vardagsliv samt att man hade flera olika slags transportbehov. Lådcyklarna har använts till utflykter och ärenden, det vill säga både nöjes- och nyttoresor. Bland förutsättningarna för lådcykelförsökets framgång fann vi en positiv inställning till lådcykelpoolen i föreningen – även bland medlemmar som inte själva använde lådcyklarna. Vi fann också goda fysiska förutsättningar för cykling i Bagarmossen med omnejd samt att föreningen valt att bygga vidare på redan existerande praktiker vad gäller bokningsförfarande. Därutöver resonerar vi kring att lådcykelförsöket kunde varit än mer lyckosamt om även ansvarsfördelningen för cykelunderhållet samt informationsspridning och instruktion byggt vidare på föreningens redan inarbetade praktiker med särskilda arbetsgrupper. Kopplat till detta visade sig också viktiga frågor vara en noggrann och konsekvent introduktion av lådcyklarna samt att lådcyklarna står på ett synligt ställe för de presumtiva användarna. Lådcykelanvändning kanske inte är för alla boende och ej heller i alla situationer, men vi tror att om ovan nämnda lärdomar beaktas så är chanserna att en mobilitetstjänst som en lådcykelpool, når en optimal användningsgrad.

KTH. fms – Avdelningen för Miljöstrategisk analys TRITA-INFRA-FMS 2014:01 1652-5442

Stockholm, 39 s, 467 kB, 2014

ISBN: 978-91-7595-081-5

Index terms: Cycling, Journey, Behaviour, Attitude (psychol), Interview
Ämnesord: Cykling, Resor, Beteende, Attityder, Intervjuer

Vem saknar en p-plats?: bostadsrättsinnehavares syn på boendemiljö, egen bil, fordonspooler och mobilitetstjänster

Kupersmidt, Judith; Henriksson, Greger

http://kth.diva-portal.org/smash/get/diva2:744035/FULLTEXT03.pdf

För att skapa en miljömässigt hållbar stad behöver människorna i den ha anledning och möjlighet att anpassa sina vardagliga vanor så att dessa i sig blir en del av den hållbara utvecklingen. I denna rapport behandlas intresset och mottagligheten för att ändra vanor som berör bilinnehav, utemiljö och parkering vid bostaden samt utnyttjandet av fordonspooler, närservice, hemleveranser och kollektivtrafik. Studien ingår i projektet Innovativ Parkering i Klimatsmarta Städer, vilket kretsar kring ett boende-, mobilitets- och parkeringskoncept som innebär delvis nya lokala möjligheter och begränsningar. Konceptet är tänkt att tillämpas för nya bostadsrätter i Stockholms så kallade närförorter (ca 5-15 km från city). Vi har undersökt acceptansen för att flytta till och bo i sådana bostadsrätter hos representanter för målgruppen. Bland representanter för gruppen kollektivresenärer och cyklister inom målgruppen visade sig inte oväntat intresset vara stort för att flytta till ett boende där det erbjuds olika typer av mobilitetslösningar i utbyte mot p-tal (antalet byggda parkeringsplatser per ny lägenhet) på låg nivå. Cirka hälften av hushållen i Stockholms Stad bedömer vi hör till den gruppen idag. För intervjuade vanebilister visade det sig dock att osäker tillgång till parkeringsplats nära bostaden kunde vara av avgörande betydelse i valet av ny bostad. För en mer ombytlig kategori av bilister (som även använder andra färdmedel till vardags) så bedömde vi intresset för att flytta till ett boende där det finns alternativa transportlösningar som högre än bland vanebilisterna, även om det skulle innebära begränsade möjligheter att få en egen parkeringsplats. Ombytliga bilister verkar med tryck och/eller stöd från omgivningen samt egen, eller närståendes, erfarenhet vara beredda att prova fordonspool och i vissa fall göra sig av med egen bil. Sammanfattningsvis har vi genom den här rapporterade studien kunnat bedöma att det finns en tillräcklig acceptans för konceptet. Representanterna för målgruppen efterfrågar, eller är åtminstone intresserade av, grön utemiljö, begränsad biltrafik kring bostaden samt nya och fler mobilitetstjänster.

KTH. Fms – avdelningen för miljöstrategisk analys TRITA-INFRA-FMS 2014:05 1652-5442

Stockholm, 30 s, 152 kB, 2014

ISBN: 978-91-7595-264-2

Projektnamn: Innovativ Parkering i Klimatsmarta Städer

Index terms: Parking, Residential area, Car sharing, Resident, Attitude (psychol), Behaviour, Journey, Interview
Ämnesord: Parkering, Bostadsområden, Bilpooler, Invånare, Attityder, Beteende, Resor, Intervjuer

Påverka nyinflyttades resevanor: en handbok om informationsprojekt för nyinflyttade

https://energimyndigheten.a-w2m.se/FolderContents.mvc/Download?ResourceId=3045

Beteendepåverkande informationsåtgärder har stor potential när det gäller att locka fler till ett mer hållbart färdsätt. De är ofta också mycket kostnadseffektiva. En målgrupp som anses särskilt viktig är de som nyligen flyttat. Forskning visar också att grupper som genomför en stor förändring i sitt liv, som att byta bostad eller arbete, också är mer öppna för förändringar i sitt resande. Information och prova på-erbjudanden riktade till personer som nyligen flyttat kan därför vara en aktivitet som har potential att minska bilresandet till förmån för gång, cykel och kollektivtrafik. Under 2012-2013 har kommunerna i Västra Götalandsregionen bedrivit projektet Ny adress-nya vägvanor, med bra resultat. Innan dess har flera liknande projekt genomförts bl. a i Lund och Malmö. Denna handbok bygger framförallt på de metoder och erfarenheter som finns från projekten i Västra Götaland, Malmö och Lund. Handboken riktar sig till kommuner, regioner, konsulter och energikontor som vill arbeta för att öka andelen som går, cyklar eller åker kollektivt och som är intresserade av att genomföra ett projekt liknande det som Västra Götalandsregionen med flera gjort.

Energimyndigheten ER 2015:03 1403-1892

Eskilstuna, 30 s, 2015

Reforming the taxation of vehicle use and ownership: an overview of papers presented at the CTS symposium 18-19 September 2014

Proost, Stef; Dender, Kurt van; Eliasson, Jonas

http://www.transportportal.se/swopec/CTS2015-8.pdf

In many economies, motor fuel taxes have long been the main instruments for generating tax revenues from the transport sector. Nowadays they are also rationalized on the grounds of reducing congestion, carbon emissions, local air pollution, energy dependency, and sometimes accident costs. However, for several reasons, there is now much debate about reforming or partially replacing these taxes. This debate raises several kinds of research questions, including efficient design of such tax instruments and what factors affect their design in reality, CTS organised an international symposium where recent research regarding these issues was presented. This report summarises some findings from the symposium.

Centre for Transport Studies Stockholm, CTS Working papers in Transport Economics 2015:8

VTI

KTH Royal Institute of Technology

S-WoPEc, Scandinavian Working Papers in Economics

Stockholm, 11 s, 295 kB, 2015

Hållbart resande – möjligheter och hinder

Forward, Sonja

http://urn.kb.se/resolve?urn=urn:nbn:se:vti:diva-6823

Denna rapport presenterar en attitydundersökning där 1 133 personer deltog. Syftet med studien var att undersöka vilka faktorer som påverkar resenärers avsikt att cykla och hur man kan få den ”ovilliga” cyklisten att börja cykla. Enkäten var baserad på två olika teorier: ”Theory of planned behaviour” (TPB) och ”The transtheoretical model of change” (TTM). I enkäten fick deltagarna svara på olika frågor utifrån ovanstående teorier och koppla dem till deras vanligaste resa, det vill säga en resa som de oftast gjorde under en vecka. Resultatet från en regressionsanalys visade att 10 % av deras avsikt att cykla förklarades av sträckans längd. När man lade till deras attityd, subjektiva norm, deskriptiva norm och upplevda kontroll i steg 2 ökade förklaringsvärdet till 57 %. Deltagarna delades även in i två olika grupper; de som cyklade och de som körde bil på sin vanligaste resa. Bilisterna var betydligt mer negativa till att cykla och ansåg att det var svettigt, att det inte var speciellt bekvämt och att det skulle vara svårt att hinna med sina vardagliga aktiviteteter. Det sista avsnittet i rapporten behandlade resenärer som hade en resa som var 7 kilometer eller kortare. I detta avsnitt jämfördes de två olika modellerna, TPB och TTM. Den största skillnaden mellan grupperna var att personer i steg 1 (förmedveten) hade en betydligt mera negativ inställning till att cykla jämfört med steg 5 (vidmakthållande). I studien ingick även en faktoranalys där en rad olika föreställningar om beteendet ingick. Resultatet presenterade tre olika komponenter; ”Fort och effektiv”, ”Välbefinnande och miljötänkande” och ”Obehag”. Analyserna visade att den största skillnaden mellan de olika stegen var med avseende på ”Fort och effektiv”, det vill säga kortsiktiga effekter. De som befann sig på de tidigare stegen höll inte med om detta i lika hög grad som de som hade förändrat sitt beteende eller var på god väg. I motsats till detta så ansåg så gott som alla att cykling var bra för den egna hälsan och miljön vilket ingick i komponent 3 ”Välbefinnande och miljötänkande”. Sammanfattningsvis visar denna studie att kombinationen av teorierna TPB och TTM är användbar när man skall studera vilka faktorer som påverkar olika gruppers resande. Resultaten visar att personer befinner sig på olika steg i förändringsprocessen och att påverkansinsatser bör anpassas till vilket steg i processen gruppen befinner sig på. Rapporten avslutas med en rad olika rekommendationer som kan öka andelen cyklister.

VTI rapport 797 0347-6030

Linköping, 48 s, 1,58 MB, 2014

Index terms: Cycling, Cyclist, Attitude (psychol), Journey
Ämnesord: Cykling, Cyklister, Attityder, Resor
Extra ämnesord: Färdmedelsval

METOD- OCH MODELLUTVECKLING FÖR ENERGIEFFEKTIVISERING

Långsiktig hållbarhet i samlade effektbedömningar

Dickinson, Joanna

http://www.trivector.se/fileadmin/uploads/Traffic/Rapporter/PM_Langsiktig_hallbarhet_i_SEB_version_1.1_Trivector_Traffic_120629_Skickad.pdf

”Långsiktigt hållbara transporter”, ”långsiktig hållbarhet” och dylikt är begrepp som ofta diskuteras i transportpolitik och transportplanering. ”Långsiktig hållbar transportförsörjning för medborgare och näringsliv” utgör den ena halvan av det övergripande målet för svensk transportpolitik. Men en tydlig definition av vad ”långsiktigt hållbar transportförsörjning” (i det följande benämnt LHT) innebär saknas. Tolkningarna av begreppet är därför många och skiftande. Även om en tydlig definition saknas så är det tydligt att vi vill röra oss i riktning mot att nå en LHT. Samlad effektbedömning, SEB, är ett verktyg i transportplanering som ska utgöra stöd för beskrivning av åtgärders effekter. SEB utvecklades av Vägverket och tillämpas numera av Trafikverket. SEB ger ett sätt att bedöma åtgärders bidrag till uppfyllelse av transportpolitikens mål. SEB syftar således till att bland annat ta hänsyn till LHT. Syftet med denna PM är att beskriva hur LHT hanteras i föreliggande version av SEB och analysera hur målet kan integreras och belysas bättre i SEB.

Trivector Traffic Rapport 2012:19

Lund, 32 s, 627 kB, 2012

Index terms: Sustainability, Sustainable transport, Measurement, Definition, Cost benefit analysis
Ämnesord: Hållbar utveckling, Hållbara transporter, Mätning, Definitioner, Nyttokostnadsanalys

Description of the global energy systems model GET-RC 6.1

Grahn, Maria; Klampfl, Erica; Whalen, Margaret J; Wallington, Timothy J; Lindgren, Kristian

http://fy.chalmers.se/~np97magr/reports/Grahn_et_al_FRT-2013-10_Description_of_GET-RC_6.1.pdf

To provide a tool for decision makers to understand meeting global energy demand with global energy supply at a minimum cost and in a sustainable way, we have developed a global energy model (GET-RC 6.1) that includes a detailed description of passenger vehicle technology options. The model can be used to better understand the fuel and vehicle technology choices available for passenger vehicles and how these fit into the larger global energy system, where different energy sectors compete for the same limited primary energy sources. The original linear programming Global Energy Transition (GET) model is designed to meet exogenously given energy demand levels, subject to a CO2 constraint, at the lowest global energy system cost (all costs are in US$). The GET model is being developed and extended to address research questions related to the sustainable development of the global energy system. Several different versions of the GET model are available. The aim of this report is to describe the version used in collaboration between staff at Ford Motor Company and Chalmers University of Technology during the period 2008-2013. The model version used, GET-RC 6.1, was developed to address research questions related to light duty passenger vehicles, where R stands for regionalized and C for cars. The report contains a description of the settings that are defined in the model (i.e., the sets, parameters and variables), the equations used in the model, suggestion for how to implement the model step by step, and the mathematical description of the model.

Chalmers tekniska högskola. Institutionen för energi och miljö, Fysisk resursteori Rapport FRT-2013:10

Göteborg, 99 s, 18,68 MB, 2013

Index terms: Alternative energy, Fuel, Use, Demand (econ), Market, Forecast, Model (not math), Calculation, Software
Ämnesord: Förnybara energikällor, Bränsle, Användning, Efterfrågan, Marknad, Prognoser, Modeller, Beräkning, Mjukvara

Two papers on car fleet modeling

Habibi, Shiva

http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-122559

The reliable prediction of the composition of the car fleet regarding age, fuel consumption, and fuel type is important for many reasons, including environmental concerns. Models that are used for the prediction of future fleet composition are necessary for evaluating the impacts of different policies on the fleet and for providing policy makers with decision support. In the first paper of the thesis, we empirically address the issue that available car alternatives in the market have more levels of detail than what we observe in Swedish car registry data, and unlike the common practice of averaging the attributes over different versions of cars models, we correct this averaging by taking into account the number of versions available for each model and also their heterogeneity. We also evaluate the influence of this correction on prediction performance of the models. In the second paper, we focus on the prediction problem. We estimate a multinomial logit model (MNL) to predict the market shares of new cars in various segments in the Swedish car fleet in the short-term future. In particular, we investigate whether or not different objectives of prediction influence model selection. In other words, whether the question of prediction matters for model selection.

Kungliga tekniska högskolan. Institutionen för transportvetenskap TRITA-TSC-LIC 13-004

Stockholm, 21 s + bil (50 s), 588 kB, 2013

ISBN: 978-91-87353-07-9

Index terms: Fleet of vehicles, Prediction, Calculation, Mathematical model
Ämnesord: Fordonspark, Förutsägelser, Beräkning, Matematiska modeller

Mätinstrument för uppföljning av transporthållbarhet i svenska kommuner

Toth-Szabo, Zsuzsanna; Hiselius, Lena; Várhelyi, András

Lunds Universitet, Tekniska högskolan i Lund. Teknik och samhälle. Trafik och väg Bulletin 270 1653-1930

Lund, 62 s + bil (30 s), 2012

Index terms: Sustainability, Transport, Local authority, Evaluation (assessment), Data acquisition, Method, Environment
Ämnesord: Hållbar utveckling, Transporter, Kommunalförvaltning, Utvärdering, Datainsamling, Metoder, Miljö
Extra ämnesord: Indikatorer

Enkla tillgänglighetsmått för resor i tätort: slutrapport

Wendle, Björn; Quester, Anja; Djärv, Anna; Nordlund, Jesper

https://online4.ineko.se/trafikverket

Publikationen är ett underlag för att arbeta vidare med att fånga information om brister och trender i fråga om tillgänglighet framöver. Kommuner förväntas även ha ett eget intresse av den information som enkla mått kan ge. Detta är en ny utgåva av publikation 2010:072. Skillnaden mellan utgåvorna är att de bilagor som tidigare endast fanns i tryckt form nu även finns tillgängliga elektroniskt. Ett hållbart transportsystem kräver dock en energieffektiv bebyggelsestruktur och transportinfrastruktur som hjälper att minska biltrafikarbetet och energianvändningen istället för att främja eller till och med förutsätta en hög rörlighet. I detta ingår både användning av energisnåla färdmedel som gång, cykel eller kollektivtrafik samt ett minimum av kostsam och ytkrävande infrastruktur, i form av vägar och parkeringar. För att kunna använda sig av gång och cykel är; korta vägar till olika utbud en förutsättning, vilket även ger ett reducerat bilanvändande. I samband med det fås en tätare bebyggelsestruktur, där avstånden och restiderna är korta. Även en effektiv kollektivtrafik förutsätter en förhållandevis tät bebyggelsestruktur.

Trafikverket Publikation 2012:193

Borlänge, 130 s, 2010

ISBN: 978-91-7467-391-3

Index terms: Journey time, Accessibility, Urban area, Measurement, Method, Journey to school, Journey to work, Recreation, Map
Ämnesord: Restid, Tillgänglighet, Tätorter, Mätning, Metoder, Skolresor, Arbetsresor, Fritid, Kartor
Extra ämnesord: Avstånd

Green Credits Versus Environmentally Sustainable Traffic Operations: Comparison of Contributions to Energy and Emissions Reductions

Zhou, Yan; Tupper, Lee; Chowdhury, Mashrur; Klotz, Leidy

http://dx.doi.org/10.3141/2163-12

Although society is facing a variety of environmental issues, including the depletion of energy resources, and has a much greater awareness of climate change and its serious related social impacts, transportation systems have been pushed to increasingly greater limits because of the dramatic growth in traffic demand. A case study was performed to compare the contributions of green construction credits and those of environmentally sustainable traffic operations to reducing energy use and emissions. The study measured the impacts of green credits by using the Carnegie Mellon University economic input-output life-cycle assessment model. These impacts were compared with those achieved through sustainable traffic operation strategies, consisting of a high-occupancy vehicle lane and access to public transit. The study shows that the energy and emissions reductions obtained by use of the traffic operation strategies eclipsed those obtained by use of the green credit measures in just 1 month of traffic operations. The carbon dioxide emissions created and the total energy consumed by only 1 month of traffic were three times greater and 30% more, respectively, than those obtained by repaving the same roadway. In addition to reducing emissions, environmentally sustainable traffic operations offer social sustainability benefits, such as reducing traffic delays and improving flow, which reduce the demand for transportation infrastructure and which can ultimately reduce the need for new roadway construction. Although both green credit measures and environmentally sustainable traffic operations are essential to true sustainability, the relative impacts of both traffic operations and construction credits should be considered when research and infrastructure investments are prioritized.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2163, s 103-111, 2010

ISBN: 9780309142939

Policy-Making Tool for Optimization of Transit Priority Lanes in Urban Network

Mesbah, Mahmoud; Sarvi, Majid; Currie, Graham; Saffarzadeh, Mahmoud

http://dx.doi.org/10.3141/2197-07

Transit improvement is an effective way to relieve traffic congestion and decrease greenhouse gas emissions. Improvement can be in the form of new facilities or giving on-road priority to transit. Although construction of off-road mass transit is not always viable, giving priority to transit can be a low-cost alternative. A framework is introduced for optimization of bus priority at the network level. The framework identifies links on which a bus lane should be located. Allocation of a lane to transit vehicles would increase the utility of transit, although this can be a disadvantage to auto traffic. The approach balances the impact on all stakeholders. Automobile advocates would like to increase traffic road space, and the total travel time of users and total emissions of the network could be reduced by a stronger priority scheme. A bilevel optimization is applied that encompasses an objective function at the upper level and a mode choice, a traffic assignment, and a transit assignment model at the lower level. The proposed optimization helps transport authorities to quantify the outcomes of various strategies of transit priority. A detailed sensitivity analysis is carried out on the relative weight of each factor in the objective function. The proposed framework can also be applied in the context of high-occupancy-vehicle lanes and heavy-vehicle priority lanes.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2197, s 54-62, 2010

ISBN: 9780309160735

Measuring sustainability of transport in the city: development of an indicator-set

Toth-Szabo, Zsuzsanna; Varhelyi, Andras; Koglin, Till; Angjelevska, Beti

http://lup.lub.lu.se/luur/download%3Ffunc%3DdownloadFile%26recordOId%3D1873042%26fileOId%3D1882700

The HASTA indicator framework, covering the three dimensions of sustainability, i.e. Economic, Environmental and Social, to monitor sustainability of transport in Swedish cities was elaborated. Under the three sustainability dimensions, there are 6 sustainability aspects (indicator groups), 2-3 per dimension; these are Efficiency, Accessibility (Economic dimension), Accessibility, Safety, Liveability (Social dimension); Emissions, Resource use (Environmental dimension). The accessibility indicator group is related with both economic and social sustainability. The individual indicators are structured in three levels of a hierarchical structure. The highest level is represented by the Outcome indicators which reflect the sustainability target in the subject area of the indicator. These Outcome indicators are of both objectively measurable variables and subjective variables, reflecting how the inhabitants experience sustainability of transport in their city. On the lowest level, the Input indicators provide information on possible measures to make improvements in transport sustainability. On the intermediate level, the Output indicators show the effect of the adopted measures (Input indicators). There are 19 Outcome indicators, 22 Output indicators and 42 Input indicators.

Lunds universitet. Tekniska högskolan. Teknik och samhälle. Trafik och väg. Bulletin 261

Lund, 85 s, 1,02 MB, 2011

Index terms: Sustainability, Transport, Urban area, Measurement, Method

Mjuklänkning mellan EMEC och TIMES-Sweden: en metod för att förbättra energipolitiska underlag

Berg, Charlotte; Krook-Riekkola, Anna; Ahlgren, Erik; Söderholm, Patrik

http://www.konj.se/706.html

Projektets övergripande mål har varit att utveckla en metod för hur modellerna TIMES-Sweden och EMEC kan samverka för att bidra till att förbättra energipolitiska beslutsunderlag.; Grundfilosofin är att få modellerna att samverka på ett transparent sätt och samtidigt bibehålla respektive modells styrkor.; EMEC:s styrka är bland annat att den erbjuder en konsistent beskrivning av hur ekonomins olika sektorer interagerar med varandra medan TIMES styrka ligger i den tekniska beskrivningen av energisystemet och de viktiga interaktionerna inom energisystemet.; Länkningen av modellerna ska sträva efter att vara konsistenta och transparenta, samt att bättre beskriva viktiga aspekter av energisystemet och dess interaktion med den övriga ekonomin.

Konjunkturinstitutet Specialstudier 32 1650-996X

Stockholm, 73 s, 2012

Index terms: Energy consumption, Fuel consumption, Model (not math), Calculation, Method, Statistics
Ämnesord: Energiförbrukning, Bränsleförbrukning, Modeller, Beräkning, Metoder, Statistik

GotRIS: Göta Älv River Information Services: projektrapport

Holmberg, Per-Erik; Selander, Lisen; Karlsson, Mathias; Johansson, Pontus

http://www.transportportal.se/ShipDocs/2014-01-20rec162249.pdf

Projektet GotRIS(Göta Älv River Information System) är en förstudie och avser att studera hur ITS-lösningar kan stödja ett varaktigt transportsystem på Göta Älv / Vänern i enlighet med utredningen ”Förstudie angående mer godstrafik på Göta Älv som genomfördes på uppdrag av VGR. Projektet avser att identifiera de viktigaste områdena där ITS-lösningar kan a) undanröja eller minimera hinder för en älvpendeltrafik eller b) ge förbättrade möjligheter för älvpendeltrafik c) utgör legala eller verksamhetsmässiga förutsättningar för en älvpendeltrafik. Projektet skall också identifiera och involvera aktörer som kan ha en roll avseende ITS-lösningar i ett Göta älv-system. Vilka roller och ansvar dessa skulle ha i en implementering av ett Göta Älv River Information System (RIS) kommer också att beskrivas. Projektet avser också att identifiera ett antal förslag till demonstratorer som i en andra fas skulle kunna genomföras för att visa på effekter och nytta med ITS lösningar i ett älv-pendel system. Målsättningen är att dessa skall kunna realiseras i en fas två av detta projekt, med inriktning på demonstratorer och aktionsforskning inom dessa områden.

Viktoriainstitutet

Göteborg, 63 s, 2,35 MB, 2011

Index terms: Inland waterway transport, Intelligent transport system, Traffic control
Ämnesord: Inlandssjöfart, Intelligenta transportsystem, Trafikstyrning
Extra ämnesord: Trafikinformation

Regionwide Cumulative Effects Analysis of Long-Range Transportation Plans

Paulsen, Chris; Crist, Patrick J; Kittel, Gwen; Varley, Ian

http://dx.doi.org/10.3141/2158-02

This study investigated the feasibility and limitations of a regionwide cumulative effects analysis of long-range transportation plans (LRTPs). The key to meaningful regional cumulative effects assessment and resource conservation planning is determining when a significant impact to any given resource has been reached. This study applied a select set of natural and cultural resource metrics to the 2035 long-range transportation plans of large, medium, and small metropolitan planning organizations (MPOs). A spatial analysis was conducted to calculate the cumulative loss in the distribution of four representative resources from the proposed transportation network and land use changes. The results generated information about the resource spatial distribution and retention requirements for long-term viability. The cumulative effects were measured against quantitative sustainability indicators of high, medium, and low risk; at that time, stakeholders and decision makers could make a determination of the significance of the environmental impacts before the LRTP was complete. Informed decisions can be made about trade-offs; changes can be made to plan alternatives to create more compatible plans, or mitigation of plan effects can be identified. The model used for this study is a flexible but robust model that does not impose an undue burden on a department of transportation or MPO, but it does rely on input from resource agency experts and other stakeholders. Data were readily available in a geographic information system format, and the process appears viable for most MPOs and partners.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2158, s 10-18, 2010

ISBN: 9780309142847

Integrated Bilevel Model to Explore Interaction Between Land Use Allocation and Transportation

Zhao, Liyuan; Peng, Zhong-Ren

http://dx.doi.org/10.3141/2176-02

The purpose of this paper is to develop a bilevel integrated dynamic model - a combination of an upper land use allocation model and a lower transportation model - to quantify the interaction between different land use allocation strategies and the transportation system. To manage the dynamic land use change in spatial and temporal dimensions, the upper-level model uses cellular automata to capture the spatial attributes of land use change, whereas the bid-rent agent model focuses on household location choice behavior. The cell-based land allocation strategy and residential location choice generated in the upper-level model are fed into the lower-level model to reflect new transportation demand, travel cost, and transportation accessibility. Then, the travel cost and transportation accessibility produced in the lower-level model are fed back into the upper-level model. To optimize land use allocation strategy, a combination of a genetic algorithm and a Frank-Wolfe algorithm is used to minimize transportation system costs. Numeric analysis of a fictitious urban area showed that the optimal land allocation with the bilevel model significantly enhanced transportation efficiency and reduced the system cost of transportation by 30.8% to 90.2%.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2176, s 14-25, 2010

ISBN: 9780309160452

Algorithms to Quantify Impact of Congestion on Time-Dependent Real-World Urban Freight Distribution Networks

Conrad, Ryan G; Figliozzi, Miguel Andres

http://dx.doi.org/10.3141/2168-13

Urban congestion presents considerable challenges to time-definite transportation service providers. Package, courier, and less than truckload operations and costs are severely affected by growing congestion levels. With congestion increasing at peak morning and afternoon periods, public policies and logistics strategies that avoid or minimize deliveries during congested periods have become crucial for many operators and public agencies. However, in many cases these strategies or policies can introduce unintended side effects, such as higher labor costs, shorter working hours, and tighter customer time windows. Research efforts to analyze and quantify the impact of congestion are hindered by the complexities of vehicle routing problems with time-dependent travel times and the lack of networkwide congestion data. Research used real-world road network data to estimate travel distance and time matrices, land use and customer data to localize and characterize demand patterns, congestion data from an extensive archive of freeway and arterial street traffic sensor data to estimate time-dependent travel times, and an efficient time-dependent vehicle routing problem (TDVRP) solution method to design routes. Novel algorithms were developed to integrate real-world road network and travel data to TDVRP solution methods. Results show the impact of congestion on depot location, fleet size, and distance traveled.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2168, s 104-113, 2010

ISBN: 9780309160377

Vermont Integrated Land Use and Transportation Carbon Estimator

Mika, Anna M; Jenkins, Jennifer C; Hathaway, Kevin; Lawe, Stephen; Hershey, David

http://dx.doi.org/10.3141/2191-15

Land conversion to developed use is associated with changes in land-based fluxes of carbon ©. Changes in vehicular transportation to and from the new development may also result in additional emissions from the burning of fossil fuels. National Land Cover Database (NLCD) and regional C sequestration rates from published literature were used to create a software tool, the Vermont Integrated Land-use and Transportation Carbon Estimator (VILTCE), meant for use with widely used commercial geographic information systems software (ESRI ArcGIS using .NET). The tool is intended for metropolitan planning organizations and regional planners to calculate the spatial C sequestration and emissions from the combined land use and transportation sectors for their region of interest under current and future development scenarios. For illustration, the VILTCE was applied to Chittenden County, Vermont, as a case study. Under current conditions, the county's soils and biomass for all land types are estimated to sequester approximately 23,500 and 184,000 Mg C per year, respectively. The transportation sector results in approximately 217,800 Mg C (797,900 Mg CO2) emitted per year. Overall, Chittenden County is a C source (net release of C), emitting 37,700 Mg CO2 annually, even without taking electricity and heating into account, which would add even more anthropogenically caused emissions. The gap between C emitted and stored could increase with additional development.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2191, s 119-127, 2010

ISBN: 9780309160667

Index terms: Sensor, Technology, Railway wagon (freight), Vehicle tracking (location)
Ämnesord: Sensorer, Teknologi, Godsvagnar, Fordonslokalisering

Environmental Efficiency Model Based on Data Envelopment Analysis and Its Application to Environmentally Sustainable Transport Policies

Yoshino, Daisuke; Fujiwara, Akimasa; Zhang, Junyi

http://dx.doi.org/10.3141/2163-13

To realize environmentally sustainable transport (EST), it becomes more and more important to reduce the environmental load from the transport sector while maintaining the level of mobility. Because mobility policies often conflict with environmental ones, policy decision makers need to find a way to solve the exclusiveness between these two policies. This study attempts to apply the concept of ecoefficiency, originally proposed by the World Business Council for Sustainable Development, to tackle the dilemma between urban mobility and environmental load in cities in both developed and developing countries. This study proposes a new model, the environmental efficiency (EE) model, which expands the concept of the data envelopment analysis cost-efficiency model. This new model aims to measure the efficiency of energy consumption at a given level of mobility in each transport system by incorporating some feasible conditions. In addition, the model can find multiple sets of frontier cities that are the most efficient among homogeneously developed cities. Consequently, the proposed method contributes to providing each city with a feasible transport energy consumption goal. Moreover, a panel analysis was carried out to examine temporal changes in environmental efficiency. Finally, the effects of some EST policies implemented to raise efficiency are simulated on the basis of the EE model, including modal shifts in a city, technological innovations to improve the intensity of energy consumption in cities, and the emissions trading scheme between cities in developing and developed countries. The method is confirmed to be a useful tool for the establishment of more plausible targets for transport energy-saving policies.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2163, s 112-123, 2010

ISBN: 9780309142939

Comparing Methods for Measuring Excess Commuting and Jobs-Housing Balance: Empirical Analysis of Land Use Changes

Layman, Charles C; Horner, Mark W

http://dx.doi.org/10.3141/2174-15

Recently, several interrelated methodologies have emerged as part of research aimed at quantifying concepts of excess commuting and jobs-housing balance. These efforts are motivated by the search for connections between land use and transportation, including understanding the role of urban form in shaping commuting patterns as well as modeling the jobs-housing balance of a region. The validity of these approaches has been debated in the literature, particularly with respect to their appropriateness for addressing various substantive questions regarding land use and transport issues. This paper examines some of the debate surrounding these jobs-housing metrics, particularly in the context of how they are used in comparative urban analyses that seek to explore urban structural changes over time or space. To explore this issue, a series of hypothetical urban growth scenarios was designed; the scenarios are used to compare the metrics' performance in a single city over a hypothetical time horizon. Results suggest that each measure may not wholly address each piece of the commuting and jobs-housing puzzle, indicating that researchers may wish to use a combination of metrics to garner the most insights into land use-transportation changes.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2174, s 110-117, 2010

ISBN: 9780309160445

Incorporating Uncertainty into Transportation Decision Making: Sustainability-Oriented Approach

Jeon, Christy Mihyeon

http://dx.doi.org/10.3141/2174-09

Incorporating uncertainty into transportation decision making has become a more important activity as evidenced by the popularity of scenario-based approaches in the regional transportation planning process. Particularly in decision making to promote sustainability, uncertainty and risk factors can be important elements because they can influence which alternative is perceived as the most desirable depending on a wide range of parameters. The objective of the study is to demonstrate how some of these uncertainties can be incorporated when a multiple-criteria decision-making method is used to choose the most desirable among competing alternatives. Using data from the Atlanta, Georgia, metropolitan region, this paper examines the sensitivity of the relative desirability of competing transportation and land use plans to changes in regional priorities and weights for sustainability parameters. Throughout the study, sensitivity analysis is used as a tool to incorporate the variability in criteria weights and concurrent variation in the sustainability evaluation results and final decision. These exercises could help decision makers determine how changing the emphasis on different regional priorities could most effectively result in desired regional outcomes.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2174, s 58-67, 2010

ISBN: 9780309160445

Optimization Model for Transportation of Container Cargoes Considering Short Sea Shipping and External Cost: South Korean Case

Chang, Young-Tae; Lee, Paul T-W; Kim, Hwa-Joong; Shin, Sung-Ho

http://dx.doi.org/10.3141/2166-12

To alleviate harm to the environment, short sea shipping (SSS) is gaining popularity in transportation policy formulation as an alternative transport mode for ecofriendly and cost-efficient transportation. There have been no studies of how to optimize intermodal container movement incorporating environmental aspects into SSS networks. This paper analyzes an intermodal transportation problem of international container cargoes while incorporating the external costs of the modes into an optimization model in South Korea. The objective of the problem is to minimize the total logistic costs, that is, shipping and land transportation costs, as well as external costs such as air pollutants (particulate matter, nitrogen oxide, sulfur dioxide, and volatile organic compounds) and greenhouse gases (carbon dioxide). The results of the model show a strong foundation for encouraging more environmentally friendly modes, such as SSS and rail, and a well-balanced modal shift if transport policy is formulated in this direction.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2166, s 99-108, 2010

ISBN: 9780309142991

Macroscopic Model of Greenhouse Gas Emissions for Municipalities

Derrible, Sybil; Saneinejad, Sheyda; Sugar, Lorraine; Kennedy, Christopher

http://dx.doi.org/10.3141/2191-22

In the challenge to reduce greenhouse gas (GHG) emissions from the transportation sector, urban municipalities hold significant responsibilities. The Municipal Transportation and Greenhouse Gas (MUNTAG) model was developed to help municipalities estimate their current transportation emissions, set future targets, and run forecasting scenarios and responses to policies. A set of seven criteria was adopted for the development of the model including low input, ease of use, and feasibility (i.e., the model includes only variables that are controlled by municipalities). The model contains five strategies: land use intensification, public transport, active transport, financial policies, and vehicle technology. Each use is addressed separately and then integrated into one working model. Motorized passenger kilometers traveled (PKT) per capita is first estimated with the gross domestic product per capita and population density. With transit infrastructure indicators, PKT per capita is calculated for each transit mode. Bicycle infrastructure is included to calculate the bicycle mode share. Response to several financial policies (e.g., parking price, area pricing) can be modeled by using elasticity statistics gathered from the literature. Finally, changes in vehicle technology (e.g., hybrid electric vehicles) can be modeled by adjusting the various emission factors. One advantage of the model is that all parameters can be adapted fairly easily to account for municipal specificities. Overall, it is a macroscopic, aggregate, and static model suited for medium-sized and large municipalities that can be useful as a screening tool.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2191, s 174-181, 2010

ISBN: 9780309160667

Assessing the Effect of Infrastructure and Service Attributes on Realization of Motorways of the Sea

Tsamboulas, D; Moraiti, P; Vlahogianni, E

http://dx.doi.org/10.3141/2166-11

Motorways of the sea (MoS) is regarded as the integrated modal transportation supply chain that offers a realistic prospect for a substantial modal shift from road. It is also considered to contribute to improving competitiveness, reducing environmental damage, and enhancing regional cohesion. Research on MoS services has only recently started to develop. This paper proposes a probabilistic methodological framework based on Bayesian networks to identify and quantify the effect of different attributes on transportation supply chains that could foster the shift from traditional intermodal services to an integrated MoS process. Aspects such as operational characteristics of ports, hinterland operations, security, and administrative and customs procedures, as well as maritime and rail services, are jointly assessed. The proposed methodology identifies and prioritizes those attributes that most likely will lead to improving the operational state of an intermodal supply chain, thus rendering it an MoS chain. This could be a useful tool for decision makers to obtain the necessary information on a macro scale as they decide whether to proceed with needed investments for those intermodal links selected as potential MoS. Therefore, the model can be integrated into a decision-making framework as a tool by which necessary investments or service improvements or both could be identified.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2166, s 90-98, 2010

ISBN: 9780309142991

Performance measurement frameworks and development of effective sustainable transport strategies and indicators

Pei, Yi Lin; Amekudzi, Adjo A; Meyer, Michael D; Barrella, Elise M; Ross, Catherine L

http://dx.doi.org/10.3141/2163-08

This paper identifies seven attributes of robust performance measurement systems by analyzing five performance measurement frameworks and their use of transportation system performance indicators. The attributes are then used to examine three case studies from Europe and the United States to demonstrate the value of performance measurement frameworks for developing and improving sustainable transportation strategies and indicators. The case studies point to important considerations in formulating a robust sustainable transportation strategy at different levels of governance and also indicate the importance of ensuring alignment in an agencyâ€™s vision, objectives, and monitoring systems. The characteristics of an effective framework for the development of sustainable transportation strategies include a comprehensive sustainability objective, a good connection to the goals and objectives of an agency, and vertical and horizontal integration. In addition, a framework should capture the interactions among variables, reflect stakeholder perspectives, and consider the capabilities and constraints of the agency and should be flexible to foster self-learning.

Transportation Research Board Transportation Research Record: Journal of the Transportation Research Board 0361-1981

Washington DC, nr 2163, s 73-80, 2010

ISBN: 9780309142939

Representing freight in air quality and greenhouse gas models

Browning, Louis et al

http://onlinepubs.trb.org/onlinepubs/ncfrp/ncfrp_rpt_004.pdf

This report explores the current methods used to generate air emissions information from all freight transportation activities and their suitability for purposes such as health and climate risk assessments, prioritization of emission reduction activities, and public education. The report highlights the state of the practice, and potential gaps, strengths, and limitations of current emissions data estimates and methods. The report also examines a conceptual model that offers a comprehensive representation of freight activity by all transportation modes and relationships between modes.

National Cooperative Freight Research Program. NCFRP report 4

Washington DC, 162 s, 5,12 MB, 2010

ISBN: 9780309154819

Index terms: Emission, Greenhouse gas, Air pollution, Particulate matter, Pollution concentration, Estimation, Calculation, Model, Method, Freight transport, Transport mode, Intermodal transport, Freight centre, Rail bound transport, Road transport, Air transport, Maritime transport

Trafikinformation och miljöeffekter: beräkningar av omledningseffekter

Janhäll, Sara; Genell, Anders; Jägerbrand, Annika

http://www.vti.se/sv/publikationer/pdf/trafikinformation-och-miljoeffekter--berakningar-av-omledningseffekter.pdf

Projektet syftar till att beräkna miljöeffekterna av trafikinformation med en nyutvecklad beräkningsmodell. Baserat på denna effektsnurra redovisas även en åtgärdsbank som utifrån dagens trafikinformation syftar till förbättrad energianvändning, klimatpåverkan, luftmiljö, bullermiljö och andra miljövinster. Trafikinformation används i ökande utsträckning för att styra trafiken, särskilt i urbanmiljö där trängsel ofta påverkar framkomligheten, samtidigt som alternativa vägar finns tillgängliga. Inom vägsektorn informerar Trafikverket oftast resenären direkt, medan trafikföretagen som trafikerar järnvägsnätet får Trafikverkets information och sedan i sin tur informerar resenärer/förare. Detta påverkar genomslaget och möjligheten att styra trafiken stort, samt skapar en del problem för den trafikslagsövergripande informationen. Den här rapporten fokuserar på de akuta miljöeffekterna av trafikinformation, även om en genomgång av mer långsiktiga effekter ingår. Endast den förändrade trafikmängden och körsätt påverkar beräkningarna i effektsnurran. Många miljöeffekter kan påverkas av trafikinformation, som luftföroreningar, buller, klimatutsläpp, men även barriäreffekter, ljusförorening, förorening av vatten och mark, störning i ömtåliga områden etc. Beräkningar med effektsnurran visar hur mycket emissionerna påverkas av hur man kör, samt hur befolkningsexponeringen kan påverkas. De existerande jämförelsemodellerna är starkt förenklade och utveckling inom emissionsmodellering, exponering, effekter av exponering samt implementering av modellerna är av största vikt för att ta tillvara den kunskap som finns och hela tiden uppdateras.

Linköping, 54 s, 1,39 MB, 2013

Index terms: Driver information, Traffic control, Variable message sign, Route guidance, Impact study (environment), Emission, Air pollution, Noise, Calculation
Ämnesord: Förarinformation, Trafikstyrning, Omställbara vägmärken, Vägvisning, Miljöpåverkan, Emissioner, Luftföroreningar, Buller, Beräkning

REFERENSER TILL LITTERATUR FRÅN INTERNATIONELLA DATABASER

WORLDWIDEENERGY

Future of energy efficiency and carbon dioxide emissions of Finnish road freight transport
Author:Liimatainen, H.
Date:2013-05-15
The targets to reduce the carbon dioxide emissions to mitigate climate change are as much applicable to the road freight transport sector as they are to all other sectors of society. The aim of this research is to support the initiatives of the Finnish go…
http://URN.fi/URN:ISBN:978-952-15-3060-9

The effectiveness of differentiation of the Finnish car purchase tax according to carbon dioxide emission performance
Author:Perrels, A.; Tuovinen, T.
Date:2012-01-15
The study concerns an assessment of the effectiveness of car purchase tax differentiation according to the CO2-emission performance of newly sold cars as implemented in Finland. This policy instrument came into force as of 1 January 2008. The effect…
http://www.vatt.fi/file/vatt_publication_pdf/t168.pdf

Reducing Carbon Emissions from Transport Projects
Author:Narendra Singru
Date:2010-07-21
United Nations Framework Convention on Climate Change. USA. – United States of ... Why ADB Needs to Address Carbon Dioxide in Transportation. 4. II.
http://www.oecd.org/derec/adb/47170274.pdf

Greenhouse gas emissions from Spanish motorway transport: Key aspects and mitigation solutions
The current increasing importance of road transport in the overall greenhouse gas (GHG) emissions has led to the adoption of diverse policies for the mitigation of global warming. These policies focus in two directions, depending on whether they involve t…
http://www.sciencedirect.com/science/article/pii/S0301421513003285

Cost effectiveness comparison of certain transportation measures to mitigate greenhouse gas emissions in San Diego County, California
California's overarching mandate to achieve 1990 levels of greenhouse gases (GHGs) in 2020 (AB 32, 2005), and the ensuing recent regulations (SB 375, CEQA updates) require local and regional governments to assess GHG mitigation policies, including on…
http://www.sciencedirect.com/science/article/pii/S0301421513007027

Global climate-oriented transportation scenarios
This paper develops scenarios whereby CO2 emissions from the transportation sector are eliminated worldwide by the end of this century. Data concerning the energy intensity and utilization of different passenger and freight transportation modes in 2005, a…
http://www.sciencedirect.com/science/article/pii/S030142151200938X

Predictors of technical adoption and behavioural change to transport energy-saving measures in response to climate change
Energy conservation can be achieved through the adoption of technical measures or the changing of one's behaviour. A survey of 201 Malaysian public personnel was conducted to examine the predictors of these two types of transport energy-saving measures in…
http://www.sciencedirect.com/science/article/pii/S0301421513004795

Affordability of electric vehicles for a sustainable transport system: An economic and environmental analysis
This paper compares the economic and environmental benefits of electric and hybrid electric vehicles with that of conventional vehicles. Without tax credits, only the hybrids without plug-in incur lifetime total costs equivalent to a conventional vehicle …
http://www.sciencedirect.com/science/article/pii/S0301421513005119

Modeling light-duty plug-in electric vehicles for national energy and transportation planning
This paper sets forth a family of models of light-duty plug-in electric vehicle (PEV) fleets, appropriate for conducting long-term national-level planning studies of the energy and transportation sectors in an integrated manner. Using one of the proposed …
http://www.sciencedirect.com/science/article/pii/S030142151300832X

The influence of urban form on GHG emissions in the U.S. household sector
To better understand the role of sustainable urban development in greenhouse gas (GHG) mitigation, this study examines the paths by which urban form influences an individual household's carbon dioxide emissions in the 125 largest urbanized areas in t…
http://www.sciencedirect.com/science/article/pii/S0301421514000299

Potential impact of transition to a low-carbon transport system in Iceland
This paper develops a system dynamics model of Iceland's energy sector (UniSyDIS) that is based on the UniSyDNZ model of New Zealand's energy economy. The model focuses on the energy supply sector with endogenous representation of road transport…
http://www.sciencedirect.com/science/article/pii/S0301421514001608

Economic, social, energy and environmental assessment of inter-municipality commuting: The case of Portugal
Commuting is one of the main contributors to the high energy consumption patterns in modern economies. The need to reduce the energy spent in commuting has attracted the attention of academics and policy makers. The main goal of this research is to improv…
http://www.sciencedirect.com/science/article/pii/S0301421513011178

How to decarbonize the transport sector?
This article investigates possible evolution pathways for the transport sector during the 21st century, globally and in Europe, under a climate change control scenario. We attempt to shed light on the question how the transport sector should best be decar…
http://www.sciencedirect.com/science/article/pii/S0301421513004734

Achieving reductions in greenhouse gases in the US road transportation sector
It is well established that GHG emissions must be reduced 50 to 80% by 2050 in order to limit global temperature increase to 2 °C. Achieving reductions of this magnitude in the transportation sector is a challenge and requires a multitude of policies and …
http://www.sciencedirect.com/science/article/pii/S0301421514001013

Towards low carbon transport in Europe
Date:2012-05-15
The ambitious target of 60% reduction in greenhouse gas emissions by 2050 requires transformation of the transport system in Europe. Decarbonising transport calls for the use of less and cleaner energy, and more efficient use of modern transport infrastru…
http://www.transport-research.info/Upload/Documents/201204/20120423_214705_81522_PB02_web.pdf

Energy for sustainable road transportation in China: Challenges, initiatives and policy implications
Author:Hu, Xiaojun; Chang, Shiyan; Li, Jingjie; Qin, Yining [Institute of Energy and Environmental Economics, Energy Science Building, Tsinghua University, Beijing 100084 (China)]
Date:2010-11-15
This paper presents an overview of the initiatives launched in energy supply and consumption and the challenges encountered in sustainable road transportation development in China. It analyzes the main energy challenges related to road transportation deve…
http://www.sciencedirect.com/science/article/pii/S0360544209002102

Effects of the Built Environment on Transportation: Energy Use...
Environment ... 12 3.1. Travel, Energy Use, and Greenhouse Gas Emissions ... 12...
http://www.nrel.gov/docs/fy13osti/55634.pdf

Energy efficiency in the transport sector in the EU-27: A dynamic dematerialization analysis
Energy Economics, volume 51, page 21-30, 2015
https://doi.org/10.1016/j.eneco.2015.06.012
Author: Ziolkowska, J.R.
Author: Ziolkowski, B.
Energy use in the European Union's (EU) transport sector amounted to 340. Mtoe. 11Mtoe=megatoe (one million toe). Toe - ton of oil equivalent. in 1999 with the following increasing trend up to 379. Mtoe in 2007 and a decrease from 2008 on, down to 365. Mtoe in 2010. This changing pattern posed several fundamental questions and uncertainties regarding the broader picture of energy efficiency and environmental protection. One of them refers to absolute changes in energy use efficiency in the transport sector over time and the ways of measuring efficiency. Traditional scientific approaches conceptualized to measure efficiency of energy use do not address annual dynamics of changes in the energy use in a given sector per capita. Thus, they are not precise enough for political and methodological purposes as they do not reflect the exact amount of energy consumed in the respective countries and societies. This paper shows a possible solution to this problem and a new perspective on measuring energy efficiency by using the product generational dematerialization (PGD) indicator. The PGD indicator allows for measuring energy efficiency as a dynamic change of consumption and population occurring simultaneously. Thus, it provides an extension to the traditional methodology commonly used for measuring efficiency. To visualize a practical application of this approach, the paper provides an example of evaluating energy efficiency in the transport sector in the EU-27 in 2000-2010. The results of the analysis show a clear materialization tendency in the transport sector (the energy consumption change exceeded the population growth) until 2007 and a reverse tendency (dematerialization) between 2008 and 2010. As energy consumption has a direct impact on environmental quality and exhaustion of natural resources, the paper points out the necessity of extending sustainable resource management policies by new methodologies and providing more efficient solutions for energy consumption in the transport sector. © 2015 Elsevier B.V.

Predictive energy management of hybrid long-haul trucks
Control Engineering Practice, volume 41, page 83-97, 2015
https://doi.org/10.1016/j.conengprac.2015.04.014
Author: Johannesson, L.
Author: Murgovski, N.
Author: Jonasson, E.
Author: Hellgren, J.
Author: Egardt, B.
This paper presents a novel predictive control scheme for energy management in hybrid trucks that drive autonomously on the highway. The proposed scheme uses information from GPS together with information about the speed limits along the planned route to schedule the charging and discharging of the battery, the vehicle speed, the gear, and when to turn off the engine and drive electrically. The proposed control scheme divides the predictive control problem into three layers that operate with different update frequencies and prediction horizons. The top layer plans the kinetic and electric energy in a convex optimization problem. In order to avoid a mixed-integer problem, the gear and the switching decision between hybrid and pure electric mode are optimized in a lower layer in a dynamic program whereas the lowest control layer only reacts on the current state and available references. The benefits of the proposed predictive control scheme are shown by simulations between Frankfurt and Koblenz. The simulations show that the predictive control scheme is able to significantly reduce the mechanical braking, resulting in fuel reductions of 4% when allowing an over and under speed of 5. km/h. © 2015 Elsevier Ltd.

Efficient Real-Time Train Scheduling for Urban Rail Transit Systems Using Iterative Convex Programming

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https://doi.org/10.1109/TITS.2015.2445920
Author: Wang, Y.
Author: Ning, B.
Author: Tang, T.
Author: van den Boom, T. J.
Author: De Schutter, B.
The real-time train scheduling problem for urban rail transit systems is considered with the aim of minimizing the total travel time of passengers and the energy consumption of the operation of trains. Based on the passenger demand in the urban rail transit system, the optimal departure times, running times, and dwell times are obtained by solving the scheduling problem. A new iterative convex programming (ICP) approach is proposed to solve the train scheduling problem. The performance of the ICP approach is compared with other alternative approaches, i.e., nonlinear programming approaches, a mixed-integer nonlinear programming (MINLP) approach, and a mixed-integer linear programming (MILP) approach. In addition, this paper formulates the real-time train scheduling problem with stop-skipping and shows how to solve it using an MINLP approach and an MILP approach. The ICP approach is shown, via a case study, to provide a better tradeoff between performance and computational complexity for the real-time train scheduling problem. Furthermore, for the train scheduling problem with stop-skipping, the MINLP approach turns out to have a good tradeoff between the control performance and the computational efficiency.

Evaluation of ship performance in international maritime transportation using an onboard measurement system - in case of a bulk carrier in international voyages

Ocean Engineering, volume 104, page 294-309, 2015
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Author: Sasa, K.
Author: Terada, D.
Author: Shiotani, S.
Author: Wakabayashi, N.
Author: Ikebuchi, T.
Author: Chen, C.
Author: Takayama, A.
Author: Uchida, M.
The present global society has made the development of a safe and efficient maritime transportation system more imperative than ever before. Of particular impetus is the steep rise in the price of crude oil, which has required shipping companies to minimize the fuel consumption of their ships. Moreover, the emission of carbon dioxide has been restricted by the EEDI (Energy Efficiency Design Index) issued by the IMO (International Maritime Organization). Weather routing services have become more important to shipping companies. However, there are accuracy deficiencies in the numerical models employed by such services for purposes such as weather forecast and the ship speed loss phenomenon. Moreover, the development of weather routing models has been hampered by insufficient accumulation of continuous data on ship motions, and the navigation, engine, and weather parameters. The data used for this study was collected over one year from a 20,000 DWT class bulk carrier on worldwide voyages. Some new relationships regarding ship motions, speed loss, and wave conditions were developed, which were verified by experimental data and numerical simulations of the frequency response of the ship motion and of the weather and ocean.

A Survey on Energy-Efficient Train Operation for Urban Rail Transit

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Author: Yang, X.
Author: Li, X.
Author: Ning, B.
Author: Tang, T.
Due to rising energy prices and environmental concerns, the energy efficiency of urban rail transit has attracted much attention from both researchers and practitioners in recent years. Timetable optimization and energy-efficient driving, as two mainly used train operation methods in relation to the tractive energy saving, make major contributions in reducing the energy consumption that has been studied for a long time. Generally speaking, timetable optimization synchronizes the accelerating and braking actions of trains to maximize the utilization of regenerative energy, and energy-efficient driving optimizes the speed profile at each section to minimize the tractive energy consumption. In this paper, we present a fully comprehensive survey on energy-efficient train operation for urban rail transit. First, a general energy consumption distribution of urban rail trains is described. Second, the current literature on timetable optimization and energy-efficient driving is reviewed. Finally, according to the review work, it is concluded that the integrated optimization method jointly optimizing the timetable and speed profile has become a new tendency and ought to be paid more attention in future research.

An integrated control model for headway regulation and energy saving in urban rail transit
IEEE Transactions on Intelligent Transportation Systems, volume 16, issue 3, page 1469-1478, 2015
https://doi.org/10.1109/TITS.2014.2366495
Author: Ning, B.
Author: Xun, J.
Author: Gao, S.
Author: Zhang, L.
In an urban rail transit system, issues regarding headway regulation have aroused wide attention. The assurance of headway regularity can decrease train delay times and average passenger waiting times. An integrated control method is proposed to optimize train headway by adjusting the train arrival time at stations. The adjustment of train arrival time is achieved by using an analytical method, and then the speed profile for each train is calculated by a suboptimal method, which has been applied in a practical system. Through simulation, the CPU time for calculating optimal train arrival time and speed profile is analyzed, respectively. The analysis demonstrates that the proposed method satisfies the real-time requirements for solving the headway regulation problem. By adopting the proposed method, the average passenger waiting time and the energy consumption can be decreased. In particular, the proposed method has better performance when the dispatch headway is large. © 2000-2011 IEEE.

Does energy follow form? The case of household travel in Jinan, China
Mitigation and Adaptation Strategies for Global Change, volume 20, issue 5, page 701-718, 2015
https://doi.org/10.1007/s11027-014-9618-8
Author: Jiang, Y.
Author: Zegras, P.C.
Author: He, D.
Author: Mao, Q.
Rapidly increasing transportation energy use in China poses challenges to national energy security and the mitigation of greenhouse gas emissions. Meanwhile, the development of automobile oriented neighborhood structures, such as superblock housing, currently dominates urban expansion, and construction in Chinese cities. This research takes an empirical approach to understanding the relationship between neighborhood type and household travel energy use in Jinan, China, by examining nine neighborhoods that represent the four types of urban community commonly found in Chinese cities: traditional, grid, enclave, and superblock. After conducting a survey, we derive disaggregate household transport energy uses from the' self-reported weekly travel diaries. Comparative analysis and two-step instrumental variable models are employed. Results show that, all else being equal, households located in superblock neighborhoods consume more transportation energy than those in other neighborhood types, because such households tend to own more cars and travel longer distances. Proximity to transit corridors and greater distance from the city center are also associated with higher household transport energy use in these neighborhoods, although both impacts are minor, partially because of the offsetting effects of car ownership. Overall, the analysis suggests that, to help chart a more energy-efficient future in urban China, policymakers should (1) examine past neighborhood designs to find alternatives to the superblock, (2) focus on strategic infill development, (3) encourage greater use of bicycles and e-bikes as a substitute for larger motorized vehicles, (4) improve the efficiency of public transportation, and (5) consider ways to shape citizens' preferences for more energy-efficient modes of travel. © 2014, Springer Science+Business Media Dordrecht.

Travel, transport and energy implications of university-related student travel: A case study approach

Transportation Research Part D: Transport and Environment, volume 38, page 27-40, 2015
https://doi.org/10.1016/j.trd.2015.04.028
Author: Davison, L.
Author: Ahern, A.
Author: Hine, J.
This study highlighted significant cultural differences and complexity in travel behaviour associated with travel to university across the UK and Ireland. This paper examines university travel behaviours and the implications for emissions, across the 2012-2013 academic year, based on responses from 1049 students across 17 universities in Ireland and the UK. Surveys were analysed to examine the trips of students both during term time and when accessing the universities each year. The data analysis in this paper examines three aspects of the transport implications of travel to and from university. Firstly the journey between university and term time address (or permanent address if the respondent does not have a separate term time address), secondly the journey between the university area and a separate permanent address where relevant; and thirdly implications for emissions resulting from university-related travel.The study found that student car users were more likely to be female, older students, or studying part time; male students were more likely to use active modes. The study indicated interesting differences between students living in different parts of the UK and Ireland. For example, it was found that there was a higher level of car dependence amongst Northern Irish students compared to other areas; and a greater variability in travel distances in Scotland and Northern Ireland. In England, car use was more pronounced when students travelled from their permanent address to term time address, and, as in Ireland, there was evidence of more car sharing on such trips. Public transport usage was more pronounced amongst Scottish students. The effect of these transport choices on emissions is significant and demonstrates the importance of education related trips to the development of a transport policy response. The analysis shows that annual emissions are highest for regular travel to and from university when a student has a permanent address rather than a separate term time and permanent address.

An optimization model of energy and transportation systems: Assessing the high-speed rail impacts in the United States

Transportation Research Part C: Emerging Technologies, volume 54, page 131-156, 2015
https://doi.org/10.1016/j.trc.2015.03.007
Author: Krishnan, V.
Author: Kastrouni, E.
Author: Pyrialakou, V.D.
Author: Gkritza, K.
Author: McCalley, J.D.
This paper presents a long-term investment planning model that co-optimizes infrastructure investments and operations across transportation and electric infrastructure systems for meeting the energy and transportation needs in the United States. The developed passenger transportation model is integrated within the modeling framework of a National Long-term Energy and Transportation Planning (NETPLAN) software, and the model is applied to investigate the impact of high-speed rail (HSR) investments on interstate passenger transportation portfolio, fuel and electricity consumption, and 40-year cost and carbon dioxide (CO2) emissions. The results show that there are feasible scenarios under which significant HSR penetration can be achieved, leading to reasonable decrease in national long-term CO2 emissions and costs. At higher HSR penetration of approximately 30% relative to no HSR in the portfolio promises a 40-year cost savings of up to $0.63T, gasoline and jet fuel consumption reduction of up to 34% for interstate passenger trips, CO2 emissions reduction by about 0.8 billion short tons, and increased resilience against petroleum price shocks. Additionally, sensitivity studies with respect to light-duty vehicle mode share reveal that in order to realize such long-term cost and emission benefits, a change in the passenger mode choice is essential to ensure higher ridership for HSR. © 2015 Elsevier Ltd.

The role of lock-in mechanisms in transition processes: The case of energy for road transport

Environmental Innovation and Societal Transitions, 2015
https://doi.org/10.1016/j.eist.2015.07.005
Author: Klitkou, A.
Author: Bolwig, S.
Author: Hansen, T.
Author: Wessberg, N.
This paper revisits the theoretical concepts of lock-in mechanisms to analyse transition processes in energy production and road transportation in the Nordic countries, focussing on three technology platforms: advanced biofuels, e-mobility and hydrogen and fuel cell electrical vehicles. The paper is based on a comparative analysis of case studies.The main lock-in mechanisms analysed are learning effects, economies of scale, economies of scope, network externalities, informational increasing returns, technological interrelatedness, collective action, institutional learning effects and the differentiation of power.We show that very different path dependencies have been reinforced by the lock-in mechanisms. Hence, the characteristics of existing regimes set the preconditions for the development of new transition pathways. The incumbent socio-technical regime is not just fossil-based, but may also include mature niches specialised in the exploitation of renewable sources. This implies a need to distinguish between lock-in mechanisms favouring the old fossil-based regime, well-established (mature) renewable energy niches, or new pathways. © 2015 Z.

A system dynamics approach to scenario analysis for urban passenger transport energy consumption and CO^2 emissions: A case study of Beijing

Energy Policy, volume 85, page 253-270, 2015
https://doi.org/10.1016/j.enpol.2015.06.007
Author: Liu, X.
Author: Ma, S.
Author: Tian, J.
Author: Jia, N.
Author: Li, G.
With the accelerating process of urbanization, developing countries are facing growing pressure to pursue energy savings and emission reductions, especially in urban passenger transport. In this paper, we built a Beijing urban passenger transport carbon model, including an economy subsystem, population subsystem, transport subsystem, and energy consumption and CO<inf>2</inf> emissions subsystem using System Dynamics. Furthermore, we constructed a variety of policy scenarios based on management experience in Beijing. The analysis showed that priority to the development of public transport (PDPT) could significantly increase the proportion of public transport locally and would be helpful in pursuing energy savings and emission reductions as well. Travel demand management (TDM) had a distinctive effect on energy savings and emission reductions in the short term, while technical progress (TP) was more conducive to realizing emission reduction targets. Administrative rules and regulations management (ARM) had the best overall effect of the individual policies on both energy savings and emission reductions. However, the effect of comprehensive policy (CP) was better than any of the individual policies pursued separately. Furthermore, the optimal implementation sequence of each individual policy in CP was TP?PDPT?TDM?ARM. © 2015 Elsevier Ltd.

An optimisation method for train scheduling with minimum energy consumption and travel time in metro rail systems

Transportmetrica B, volume 3, issue 2, page 79-98, 2015
https://doi.org/10.1080/21680566.2015.1007577
Author: Yang, X.
Author: Li, X.
Author: Ning, B.
Author: Tang, T.
Both energy consumption and travel time are important indices to evaluate the efficiency of operations of metro rail systems. This paper proposes an optimisation method to schedule trains for reducing the energy consumption and travel time. Firstly, we formulate an integer programming model with timetable and speed control. Secondly, we design an optimal train control algorithm and an adaptive genetic algorithm to find a good solution. Finally, we conduct numerical examples based on the real-life operation data from the Beijing Yizhuang metro rail line of China. The results illustrate that the proposed approach can reduce energy consumption by 7.31% and reduce travel time by 3.26% in comparison with the current operation strategy. © 2015 Hong Kong Society for Transportation Studies Limited.

Bridging the implementation gap: Combining backcasting and policy analysis to study renewable energy in urban road transport

Transport Policy, volume 37, page 72-82, 2015
https://doi.org/10.1016/j.tranpol.2014.10.014
Author: Olsson, L.
Author: Hjalmarsson, L.
Author: Wikström, M.
Author: Larsson, M.
This paper combines backcasting and policy analysis to identify the opportunities for and barriers to the increased use of renewable energy and energy-efficient vehicles in an urban road transport system, namely, that of Stockholm, Sweden, in 2030. The combination of methods could bridge the implementation gap between scenario-based research and actual policy implementation and thus increase the chances of research being implemented in practise. In the case study, backcasting identifies a need for diverse fuels and vehicles and for immediate policy action. However, analysis of policy integration demonstrates that such action is unlikely given current policy structures. The fundamental lack of integration between energy and transport policy obstructs measures to increase the use of renewable fuels and more energy-efficient vehicles, which in turn obstructs the reduction of CO2 emissions from transport. The combination of backcasting and policy analysis is demonstrated to improve our understanding of the prerequisites for transitioning to a system based on renewable energy, and could thus be useful in further research. © 2014 Elsevier Ltd.

Control of urban rail transit equipped with ground-based supercapacitor for energy saving and reduction of power peak demand

International Journal of Electrical Power and Energy Systems, volume 67, page 439-447, 2015
https://doi.org/10.1016/j.ijepes.2014.11.019
Author: Gao, Z.
Author: Fang, J.
Author: Zhang, Y.
Author: Jiang, L.
Author: Sun, D.
Author: Guo, W.
An energy storage system based on Supercapacitor (SC) for metro network regenerative braking energy is investigated. The control strategy according to the various power requirements in metro line and differing characteristics of these storage devices are proposed to manage the energy and optimize the power supply system performance. In order to estimate the required energy storage system (ESS), line 5 of Beijing metro network is modeled through a novel approach, in different running interval conditions based on the real data obtained from Beijing metro office. A useful method is proposed to predict the instantaneous regenerative energy which is delivered to each substation before applying ESS and based on that the ESS configuration for each substation is determined. A simplified mathematical model of the whole metro network has been developed and the main features of the control strategy have been developed. Numerical simulations show the efficacy of suggested control and the energy saving obtained for metro trains.

Definition of key performance indicators for energy efficient assessment in the transport sector
SMARTGREENS 2015 - 4th International Conference on Smart Cities and Green ICT Systems, Proceedings, page 78-82, 2015

Author: Mantilla, R.M.F.
Author: Nieto, L.A.
Author: Lastra, J.L.M.
The transport sector is constantly growing as well as its complexity and energy consumption. One way to reduce the involvement and the volume of data to evaluate and monitor the energy efficiency of the sector for cities authorities is by using Key Performance Indicators (KPIs). This paper describes a set of KPIs to measure and track energy efficiency in the transport sector. The KPIs that are summarized in this paper were identified based on a literature review of mobility projects/strategies/policies that had been implemented in cities around the world. Future applications, which are presented at the end of this article, will give a better understanding of the systems and its components.

Development of a cloud-based service framework for energy conservation in a sustainable intelligent transportation system

International Journal of Production Economics, volume 164, page 454-461, 2015
https://doi.org/10.1016/j.ijpe.2014.08.014
Author: Hsu, C.-Y.
Author: Yang, C.-S.
Author: Yu, L.-C.
Author: Lin, C.-F.
Author: Yao, H.-H.
Author: Chen, D.-Y.
Author: Robert Lai, K.
Author: Chang, P.-C.
The research aims to develop a cloud-based service framework for reducing carbon dioxide emission and fuel consumption in intelligent transportation system. It collects traffic condition, driving behavior, and video through telematics and digital tachygraphy and road-side cameras to facilitate advanced data analytics for the reduction of fuel consumption. There are three specific features regarding this framework. First, a transportation cloud is built for the storage of massive data and video. This cloud-based system not only avoids the use of hard disks at client-site for energy conservation and reliability improvement, but also allows the back-end data analytics at both server and client sites. Second, a real-time traffic condition analytic was developed by mobile machine vision techniques based on video and data collected from road-side cameras to analyze and recognize traffic conditions, such as traffic flow, braking events, traffic lights, and count-down timers. Then, a fuel-efficient route navigation technology is also developed for eco-driving based on real time traffic information and a dynamic shortest path algorithm for saving time and fuel consumption. Third, a sequential pattern mining model was proposed to diagnose misguided driving behavior for eco-driving based on the real-time data collected from digital tachygraphy and on-board diagnostics system. Furthermore, an e-Learning visualization system was developed to provide advice and instruction for correction of misguided driving behavior. Indeed, the fuel consumption and power consumption can be reduced simultaneously based on the proposed framework regarding cloud-based system and eco-driving.

Driving forces of road freight CO2 in 2030
International Journal of Physical Distribution and Logistics Management, volume 45, issue 3, page 260-285, 2015

https://doi.org/10.1108/IJPDLM-10-2013-0255
Author: Liimatainen, H.
Author: Hovi, I.B.
Author: Arvidsson, N.
Author: Nykanen, L.
Purpose - Road freight carbon dioxide (CO2) emissions are determined by a complex interaction between shippers and hauliers within the boundaries set by regulations and economic factors. It is necessary to gain understanding about the various driving forces and trends affecting these to promote low carbon future. The purpose of this paper is to find out what factors affect the long-term future development of road freight CO2 emissions and whether the long-term emission targets will be achieved. Design/methodology/approach - An international comparison of similar Delphi surveys is carried out in Finland, Norway, and Sweden. Findings - The Delphi surveys indicate that the structural change of the economy, changes of consumer habits, concerns of energy and environment and changes in logistics practices and technology are the overarching trends shaping the future of the energy efficiency and CO2 emissions of road freight transport. The expert forecasts for Finland and Sweden highlight that reaching the carbon emission target of 30 per cent reduction for the year 2030 is possible. However, the CO2 emissions may also increase significantly even though the CO2 intensity would decrease, as the Norwegian forecast shows. 0riginality/value - This study combined quantitative and qualitative analysis. The results confirmed that similar factors are seen to affect the future in all three countries, but with some national differences in the likely effects of the factors. Future research using the same methodology would enable wider analysis of the global significance of these driving forces. © Emerald Group Publishing Limited.

Dynamic simulation of energy consumption in mixed traffic flow considering highway toll station
Modern Physics Letters B, volume 29, issue 2, 2015
https://doi.org/10.1142/S0217984914502649
Author: Qian, Y.-S.
Author: Zhang, X.-L.
Author: Zeng, J.-W.
Author: Shao, X.-M.
Author: Wang, N.
An improved model of energy consumption including toll station is presented in this paper. Using the model, we study the influences of mixed ratio, the idling energy consumption of vehicle, vehicle peak velocity, dwell time and random deceleration probability on energy consumption of Electronic Toll Collection or Manual Toll Collection mixed traffic flow on single lane under periodic condition. Simulating results indicate that the above five parameters are all increasing functions of total energy consumption, in which the idling energy consumption represents the major amounts with the increase of mixed ratio and occupancy rate. Thus, the existence of toll station has significant effect on the energy consumption of mixed traffic flow. © 2015 World Scientific Publishing Company.

Effects of water flow on energy consumption and travel times of micro-ferries for energy-efficient transport overwater

Operations Research/ Computer Science Interfaces Series, volume 58, page 235-258, 2015
https://doi.org/10.1007/978-3-319-16133-4_13
Author: Burger, M.
Author: De Schutter, B.
Controlling the transport of water by adjusting water flows in rivers and canals, inevitably will have an effect on the transport over water by vessels as well. We will discuss the effect of flowing water on scheduling micro-ferries (small autonomous water-taxis) using the least amount of energy, while aiming at satisfying customer demands with respect to pick-up times. This trade-off will be made by optimizing the assignment of micro-ferries to customers in a specific order, and by searching for the best travel speeds. The interplay between controlling transport of water and scheduling transport over water will become clear by the explicit relation between the speed of the water (influenced by water management) on travel times and energy consumption, derived in this chapter. It is shown that on average the travel times (and thereby the energy consumption) will increase with increasing magnitudes of the current. Hence, decisions made on water management have a direct effect on the performance of the transport system, and the interests of both parties should be taken into account to obtain a well-functioning water transport system. © Springer International Publishing Switzerland 2015

Energy-efficient train control in urban rail transit systems
Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit, volume 229, issue 4, page 446-454, 2015

https://doi.org/10.1177/0954409713515648
Author: Su, S.
Author: Tang, T.
Author: Chen, L.
Author: Liu, B.
With the latest developments in technology, the Automatic Train Operation (ATO) has been widely used in urban rail transit systems over the past decade. The control process used by the ATO system generally consists of two levels. The high-level control calculates the target speed according to the moving authority of the trains and the low-level control implements precise tracking on the target speed by controlling the traction and braking force. Most of the literature has only focused on the high-level control to optimize the train trajectory, but did not practically combine the low-level control of the ATO system. When the optimized trajectory is applied as the target speed, it will cause frequent switches between acceleration and braking for precise tracking and waste a lot of energy. Hence, this previous research may not be applied to practical ATO systems. In this paper, a numerical algorithm is proposed to solve the energy-ecient train control problem with a given trip time by distributing the reverse time to dierent segments. Then a method is presented for optimization of target speeds based on the ATO control principles, which guides the train to output optimized control sequences. The proposed approach is capable of avoiding the unnecessary switching and then eciently reduces the traction energy consumption of the train switches. Furthermore, case studies have been undertaken based on infrastructure data from the Beijing Yizhuang rail transit line, and the simulation results illustrate that the proposed approach results in good performance with regards to energy saving. © IMechE 2014 Reprints and permissions: sagepub.co.uk/journalsPermissions.nav.

Energy-efficient urban traffic management: A microscopic simulation-based approach
Transportation Science, volume 49, issue 3, page 637-651, 2015
https://doi.org/10.1287/trsc.2014.0554
Author: Osorio, C.
Author: Nanduri, K.
Microscopic urban traffic simulators embed the most detailed traveler behavior and network supply models. These simulators represent individual vehicles and can therefore account for vehicle-specific technologies. They can be coupled with instantaneous fuel consumption models to yield detailed network-wide fuel consumption estimates. Nonetheless, there is currently a lack of computationally efficient optimization techniques that enable the use of these complex integrated models to design sustainable transportation strategies. This paper proposes a methodology that combines a stochastic microscopic traffic simulation model with an instantaneous vehicular fuel consumption model. The combined models are embedded within a simulation-based optimization algorithm and used to address a signal control problem that accounts for both travel times and fuel consumption. The proposed technique couples detailed, stochastic, and computationally inefficient models, yet is an efficient optimization technique. Efficiency is achieved by combining simulated observations with analytical approximations of both travel time and fuel consumption. This methodology is applied to a network in the Swiss city of Lausanne. Within a tight computational budget, the proposed method identifies signal plans with improved travel time and fuel consumption metrics. It outperforms traditional methodologies, which use only simulated information or only analytical information. The case study illustrates the added value of combining simulated and analytical information when performance metrics with high variance, such as fuel consumption, are used. This method enables the use of disaggregate instantaneous vehicle-specific information to inform and improve traffic operations at the network-scale. © 2015 INFORMS.

Energy-efficient urban transport
Green Energy and Technology, volume 142, page 127-139, 2015

https://doi.org/10.1007/978-1-4471-6666-5_11

Urban transport alone consumes nearly 8 % of world energy use, and it is one of the largest contributors in both global and local pollutions. Urban transport energy efficiency is to maximize travel activity with minimal energy consumption through combinations of land-use planning, transport modal share, energy intensity reduction, fuel-type switching, and replacement of information transmission for vehicle travels. Different kinds of cities have different barriers to energy-efficient transport modes. To achieve urban transport efficiency in energy use, government policies are needed to unlock these barriers in the market. Sustainable energy efficiency transport system needs both public and private sector investments. PPPs can greatly facilitate low-carbon and high energy-efficient transportation technologies. Substitution of moving information for moving people can greatly improve energy efficiency in the transport sector. A future efficient transport system in urban area will be in affordable, frequent, and seamless public transport that integrates information technologies, trains, bicycles, taxies, and sidewalks. © Springer-Verlag London 2015.

Energy intensity in road freight transport of heavy goods vehicles in Spain
Energy Policy, volume 85, page 309-321, 2015
https://doi.org/10.1016/j.enpol.2015.06.018
Author: Andrés, L.
Author: Padilla, E.
This paper examines the factors that have influenced the energy intensity trend of the Spanish road freight transport of heavy goods vehicles over the period 1996-2012. This article aims to contribute to a better understanding of these factors and to inform the design of measures to improve energy efficiency in road freight transport. The paper uses both annual single-period and chained multi-period multiplicative LMDI-II decomposition analysis. The results suggest that the decrease in the energy intensity of Spanish road freight in the period is explained by the change in the real energy intensity index (lower energy consumption per tonne-kilometre transported), which is partially offset by the behaviour of the structural index (greater share in freight transport of those commodities the transportation of which is more energy intensive). The change in energy intensity is analysed in more depth by quantifying the contribution of each commodity through the attribution of changes in Divisia indices. © 2015 Elsevier Ltd.

Energy-saving optimization of train on urban rail transit network
Journal of Information and Computational Science, volume 12, issue 9, page 3445-3453, 2015
https://doi.org/10.12733/jics20106025
Author: Wu, Y.
Author: Wang, Z.
Aiming at the current energy-saving optimization, researches of train are mostly given priority to sections and lines. Firstly, this paper took the section energy-saving optimization of a single line as the research object, and set the step-length to bring about the transition of operational mode from the time-saving to energy-saving. Secondly, it constructed a knapsack problem to come true the energy-saving optimization of line via distributing reserve time of it. Then considering the transfer constraint, we built the train energy-saving optimization model of urban rail transit network and resolved the model by genetic- annealing algorithm. Finally, we took a simple network as an example to illustrate the maneuverability of the method. Results show that the optimization is reasonable and effective. Considering the transfer between lines, the energy-saving ratios relative to the time-saving pattern are 41.54%, 40.57% and 33.84%. And compared with the timing pattern, the train energy consumptions increase respectively only by 13.14%, 12.81% and 14.64%.

How standardization will balance sustainability goals in the transport component of energy supply chains: Efficiency versus environmental safety

Transportation Journal, volume 54, issue 1, page 136-149, 2015

https://doi.org/10.1353/tnp.2015.0004

Author: Bagby, J.W.

Society will likely intensify demands on all supply chain participants to facilitate attainment of two seemingly conflicting sustainability goals: economic and environmental. Critics argue these goals are stubbornly irreconcilable tradeoffs. However, there is significant evidence of their complementarity. This article discusses how many opposing public-policy forces interact to impose the appearance of daunting contradiction. The policy analysis demonstrated here offers a logical path out of the apparent morass. It is argued that the advantages of standardization for key energy supply chain elements can harmonize these existing and other emerging interests, both foreseeable and unforeseeable. The crude-by-rail controversy illustrates how these standardization matters impact national energy policy.

Methodology for energy efficiency assessment in the transport sector for smart cities

SMARTGREENS 2015 - 4th International Conference on Smart Cities and Green ICT Systems, Proceedings, page 72-77, 2015

Author: Mantilla R., M.F.
Author: Angelica, N.L.
Author: Lastra, J.L.M.
Author: Kotakorpi, E.

To measure the impact of transport projects in smart cities can be expensive and time-consuming. One challenge in measuring the effect of these projects is that impacts are poorly quantified or are not always immediately tangible. Due to transport projects nature, it is often difficult to show results in short term because much of the effort is invested in changing attitudes and behaviour on the mobility choices of city inhabitants. This paper presents a methodology that was developed to evaluate and define city transport projects for increasing energy efficiency. The main objective of this methodology is to help city authorities to improve the energy efficiency of the city by defining strategies and taking actions in the transportation domain. In order to define it, a review of current methodologies for measuring the impact of energy efficiency projects was performed. The defined energy efficiency methodology provides standard structure to the evaluation process, making sure that each project is being evaluated against its own goals and as detailed as it is required to the level of investment. An implementation in a smart city of the first step of this methodology is included in order to evaluate the implementation phase of the defined process.

Potential savings and cost allocations for forest fuel transportation inSweden: A country-wide study

Energy, volume 85, page 353-365, 2015
https://doi.org/10.1016/j.energy.2015.03.105
Author: Flisberg, P.
Author: Frisk, M.
Author: Rönnqvist, M.
Author: Guajardo, M.
Bioenergy is becoming a more important energy source. An important bioenergy assortment in Sweden is given by primary forest fuels. These account for about 14% of the biofuels or about 4% of Sweden's total energy. There are large volumes of forest fuel available. However, it is a low-value commodity and it is very sensitive to logistic cost to make it profitable. In this article, we analyse alternatives to lower the logistic costs. This includes the scheduling of the harvest and chipping operations in relation to transportation, delivered mix of assortments to customers and collaboration. We study these alternatives in a case that accounts for all operations in Sweden, involving 200,000 registered transports of about 6.1million tons of forest biomass, equivalent to 17.4TWh of energy consumption. We define a number of instances for these alternatives and formulate an optimization model based on linear programming. The solution is obtained by using a decision support system. We identify savings potential of about 22% from changing the operations. These savings can have a large impact on the industry and, more importantly, increase the use of bioenergy. We also test cost allocation methods to spread the savings based on cooperative game theory concepts. © 2015 Elsevier Ltd.

Sustainability in transport - A study regarding energy efficiency in maritime, road and rail transport
Quality - Access to Success, volume 16, page 281-288, 2015
Author: Surugiu, I.
Author: Weber, G.
Author: Mailinger, W.
This paper highlights the results of various research studies related to sustainability in transportation. The article presents some aspects regarding the maritime transportation industry and highlights how the Tanker Management Self-Assessment positively influenced ship operators' activity. Furthermore, road and rail are analyzed, highlighting the advantages and disadvantages of these modes within the current environment. The paper also examines strategies to achieve a sustainable transport through energy efficiency and fuel management, minimizing waste and promoting energy efficiency awareness.

Sustainable transportation strategies for decoupling road vehicle transport and carbon dioxide emissions

Management of Environmental Quality, volume 26, issue 3, page 373-388, 2015
https://doi.org/10.1108/MEQ-07-2014-0120

Author: Velazquez, L.
Author: Munguia, N.E.
Author: Will, M.
Author: Zavala, A.G.
Author: Verdugo, S.P.
Author: Delakowitz, B.
Author: Giannetti, B.

Purpose - The purpose of this paper is to identify research priorities to guide transportation stakeholders in their practice, education, and research. Design/methodology/approach - A literature review of published, conference proceedings, agency reports, books, and web site documents was conducted, aiming at the identification of the diverging strategies and practices undertaken by transportation stakeholders in order to be able to generate initial meaningful insights about a sustainable transportation system. Findings - Sustainable transportation systems are in certain way a new paradigm where a business-as-usual approach is not possible. Vehicle makers produce more energy efficient vehicles. Nevertheless, fossil fuel is still the predominant source of energy. Regarding the level of carbon dioxide (CO<inf>2</inf>) emissions, non-motorized transport modes are preferable over motorized transport modes, and public transportation modes preferable to private transportation modes. It is also import to include environmental consideration along the design, construction, maintenance, and operation of the transportation infrastructure. While vehicles powered by alternate fuel such as biofuel, electricity, and/or fuel cell are becoming more popular, shifting to more sustainable transport modes would also require changes on commuter behaviors and individual preferences. Practical implications - The paper discusses the efforts that are underway for decoupling transport and CO<inf>2</inf> emissions, being useful for transportation stakeholders to implement or improve the effectiveness of their potential or current sustainability transport initiatives through the identification of strategies, opportunities, and barriers. Originality/value - Although there is plenty of good information about sustainability and transportation modes in literature, most of the articles analyzed focus on specific factors of the whole transportation system. The originality/value of this paper is found in the holistic perspective, here presented, of the state of the art issues that a sustainable transport system would encompass. © Emerald Group Publishing Limited.

The effects of transportation energy policy on fuel consumption and transportation safety
Multimedia Tools and Applications, volume 74, issue 7, page 2535-2557, 2015
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Author: Kim, C.-K.
Author: Chung, K.
Author: Kim, Y.
Author: Lee, K.-D.
This paper examined the impact of transportation energy policies on traffic safety through policy simulations. Considering the changes in the vehicle miles traveled (VMT) and in vehicle stock composition as a result of policy changes, the impacts of these changes on traffic accidents were examined in terms of the number of traffic accidents, traffic fatalities, and total accident costs. The main focus was on the following policy alternatives: Fuel tax, mileage based a VMT tax, Pay-as-you-drive (PAYD) and Pay-at-the-pump (PATP) insurance premium policy, and the Corporate Average Fuel Economy (CAFE) standards regulations. By integrating three interrelated economic demand decisions fully (size of the vehicle stock, use of the vehicle stock, and energy efficiency), the short-run, long-run and dynamic effects of a policy change can be predicted. The results showed that the share of light trucks will keep increasing in the future in all policy alternatives and that fuel consumption will decrease compared to the baseline in every scenario except for the VMT tax policy. The results also show that the fatality rates per vehicle miles traveled will decrease, but the CAFE policy will result in more fatalities and higher fatality rates compared to the baseline scenario. The results may provide guidance as to what would reduce the energy dependency while reducing the undesirable side effects related to traffic safety. The outcomes of this research will provide a set of specific results comparing policy scenarios in a consistent manner. The results will provide guidance as to whether the policy option would improve energy dependency while reducing the undesirable side effects, such as the problems related to the environment and the safety of motor vehicle travel. © 2014, Springer Science+Business Media New York.

Urban passenger transport energy saving and emission reduction potential: A case study for Tianjin, China
Energy Conversion and Management, 2015
https://doi.org/10.1016/j.enconman.2015.01.017
Author: Peng, B.
Author: Du, H.
Author: Ma, S.
Author: Fan, Y.
Author: Broadstock, D.C.
With rapid growth of the vehicle population, urban passenger transport in China is largely responsible for increases in energy consumption, greenhouse gas (GHG) emissions, and also atmospheric pollutants (NO x , CO, HC, PM). In this paper, we first develop an urban passenger transport energy saving and emission reduction potential evaluation model using the “Long Range Energy Alternatives Planning (LEAP)” tool; and then take Tianjin city as an empirical case to evaluate the reduction potential of final energy consumption, GHG emissions and pollutants emissions of Tianjin’s urban passenger transport sector between 2010 and 2040 under four scenarios, i.e. BAU (business as usual) scenario, PP (the 12th five-year plan policy) scenario, CP (comprehensive policy) scenario and HP (hybrid policy of PP and CP) scenario. The results show that due to the public transport promotion, energy consumption and CO2 emissions in 2040 can be reduced by 22% and 22.6% in the PP scenario, compared to BAU. The largest reductions in energy consumption, CO2 and atmospheric pollutants emissions can be achieved under CP scenario, in which vehicle population regulation is the most effective to be implemented. Emissions standard regulation is the most effective measure to reduce atmospheric pollutant emissions in all the scenarios and green energy promotion is especially effective to reduce NO x and PM. © 2015 Elsevier Ltd.

An Integrated Control Model for Headway Regulation and Energy Saving in Urban Rail Transit
IEEE Transactions on Intelligent Transportation Systems, 2014
https://doi.org/10.1109/TITS.2014.2366495
Author: Ning, B.
Author: Xun, J.
Author: Gao, S.
Author: Zhang, L.
In an urban rail transit system, issues regarding headway regulation have aroused wide attention. The assurance of headway regularity can decrease train delay times and average passenger waiting times. An integrated control method is proposed to optimize train headway by adjusting the train arrival time at stations. The adjustment of train arrival time is achieved by using an analytical method, and then the speed profile for each train is calculated by a suboptimal method, which has been applied in a practical system. Through simulation, the CPU time for calculating optimal train arrival time and speed profile is analyzed, respectively. The analysis demonstrates that the proposed method satisfies the real-time requirements for solving the headway regulation problem. By adopting the proposed method, the average passenger waiting time and the energy consumption can be decreased. In particular, the proposed method has better performance when the dispatch headway is large.

An optimal velocity-planning scheme for vehicle energy efficiency through probabilistic prediction of traffic-signal timing

IEEE Transactions on Intelligent Transportation Systems, volume 15, issue 6, page 2516-2523, 2014
https://doi.org/10.1109/TITS.2014.2319306
Author: Mahler, G.
Author: Vahidi, A.
The main contribution of this paper is the formulation of a predictive optimal velocity-planning algorithm that uses probabilistic traffic-signal phase and timing (SPAT) information to increase a vehicle's energy efficiency. We introduce a signal-phase prediction model that uses historically averaged timing data and real-time phase data to determine the probability of green for upcoming traffic lights. In an optimal control framework, we then calculate the best velocity trajectory that maximizes the chance of going through green lights. The case study results from a multisignal simulation indicating that energy efficiency can be increased with probabilistic timing data and real-time phase data. Monte Carlo simulations are used to confirm that the case study results are valid, on average. Finally, simulated vehicles are driven through a series of traffic signals, using recorded data from a real-world set of traffic-adaptive signals, to determine the applicability of these predictive models to various types of traffic signals.

Efficient Bilevel approach for urban rail transit operation with stop-skipping
IEEE Transactions on Intelligent Transportation Systems, volume 15, issue 6, page 2658-2670, 2014
https://doi.org/10.1109/TITS.2014.2323116
Author: Wang, Y.
Author: De Schutter, B.
Author: Van Den Boom, T.J.J.
Author: Ning, B.
Author: Tang, T.
The train scheduling problem for urban rail transit systems is considered with the aim of minimizing the total travel time of passengers and the energy consumption of the trains. We adopt a model-based approach, where the model includes the operation of trains at the terminus and at the stations. In order to adapt the train schedule to the origin-destination-dependent passenger demand in the urban rail transit system, a stop-skipping strategy is adopted to reduce the passenger travel time and the energy consumption. An efficient bilevel optimization approach is proposed to solve this train scheduling problem, which actually is a mixed-integer nonlinear programming problem. The performance of the new efficient bilevel approach is compared with the existing bilevel approach. In addition, we also compare the stop-skipping strategy with the all-stop strategy. The comparison is performed through a case study inspired by real data from the Beijing Yizhuang line. The simulation results show that the efficient bilevel approach and the existing bilevel approach have a similar performance but the computation time of the efficient bilevel approach is around one magnitude smaller than that of the bilevel approach.

An empirical study of direct rebound effect for road freight transport in China
Applied Energy, volume 133, page 274-281, 2014
https://doi.org/10.1016/j.apenergy.2014.07.090
Author: Wang, Z.
Author: Lu, M.
Improving energy efficiency has been considered as a major approach to reduce transportation fuel consumption, whereas its effectiveness that reduced transportation cost may lead to incremental energy use-i.e., a “direct rebound effect”. This paper provides a critical review of direct rebound effect literature, adopts a double logarithmic regression equation and a error correction model respectively to measure the magnitude of long-term and short-term direct rebound effects by 31 provincial panel data of China from 1999 to 2011. The empirical study shows that: in aspect of long term, a partial rebound effect exist in Chinese road freight transportation department, and its magnitude of entire nation, eastern, central and western regions are 84%, 52%, 80% and 78%. A majority of the expected energy reduction from efficiency improvement could be offset due to the existence of rebound effect; independent policy of improving energy efficiency is not as effective as people expected. In aspect of short term, a tiny super conservation effect exists in Chinese road freight transportation department. Further investigation indicated that direct rebound effect for road freight transportation tends to decline as growth rate of urbanization decrease.

Development of a cloud-based service framework for energy conservation in a sustainable intelligent transportation system

International Journal of Production Economics, 2014
https://doi.org/10.1016/j.ijpe.2014.08.014

Author: Hsu, C.-Y.
Author: Yang, C.-S.
Author: Yu, L.-C.
Author: Lin, C.-F.
Author: Yao, H.-H.
Author: Chen, D.-Y.
Author: Robert Lai, K.
Author: Chang, P.-C.

The research aims to develop a cloud-based service framework for reducing carbon dioxide emission and fuel consumption in intelligent transportation system. It collects traffic condition, driving behavior, and video through telematics and digital tachygraphy and road-side cameras to facilitate advanced data analytics for the reduction of fuel consumption. There are three specific features regarding this framework. First, a transportation cloud is built for the storage of massive data and video. This cloud-based system not only avoids the use of hard disks at client-site for energy conservation and reliability improvement, but also allows the back-end data analytics at both server and client sites. Second, a real-time traffic condition analytic was developed by mobile machine vision techniques based on video and data collected from road-side cameras to analyze and recognize traffic conditions, such as traffic flow, braking events, traffic lights, and count-down timers. Then, a fuel-efficient route navigation technology is also developed for eco-driving based on real time traffic information and a dynamic shortest path algorithm for saving time and fuel consumption. Third, a sequential pattern mining model was proposed to diagnose misguided driving behavior for eco-driving based on the real-time data collected from digital tachygraphy and on-board diagnostics system. Furthermore, an e-Learning visualization system was developed to provide advice and instruction for correction of misguided driving behavior. Indeed, the fuel consumption and power consumption can be reduced simultaneously based on the proposed framework regarding cloud-based system and eco-driving.

Energy efficiency of road freight hauliers-A Nordic comparison
Energy Policy, volume 67, page 378-387, 2014
https://doi.org/10.1016/j.enpol.2013.11.074
Author: Liimatainen, H.
Author: Nykänen, L.
Author: Arvidsson, N.
Author: Hovi, I.B.
Author: Jensen, T.C.
Author: Østli, V.
In order to promote policy targets for decarbonising road freight, it is important to gain knowledge on the current energy efficiency practices of hauliers in various countries. This research aimed to provide such knowledge to enable international comparison of the energy efficiency practices of road freight hauliers. This was achieved by replicating the Finnish haulier survey in Denmark, Norway and Sweden. Energy efficiency index was developed to provide a simple metric for international comparison. The EEI covers various aspects of energy efficiency to provide a comprehensive outlook into the issue. The monitoring practices are fairly similar in all four countries, with typical monitoring done manually when filling the tank and data kept on a computer. Tonne-kilometre data is rarely monitored, but some other performance measures may be used. Current level of implementation of various energy efficiency actions is rather similar between the four countries. The simple and inexpensive actions, like choosing the lorry according to the cargo and idling avoidance, are most widely implemented. The energy efficiency index developed in this research proved to be a very useful tool for comparing the hauliers in the four countries. © 2013 Elsevier Ltd.

Assessing the impact of transport policy instruments on road haulage energy efficiency
Thermal Science, volume 18, issue 1, page 323-337, 2014
https://doi.org/10.2298/TSCI120828008M
Author: Medar, O.M.
Author: Papi?, V.D.
Author: Manojlovi?, A.V.
Author: Filipovi?, S.M.
This paper focuses on elements of transport policies affecting energy efficiency of road haulage. The purpose is to present a tool developed to support decision making during the policy making process, at the stage of formulating the elements of transport policies. The paper describes a model developed to assess the impact of policy instruments on fleet energy efficiency by multi-criteria ranking applying the Analytical Network Process. The paper describes the possibilities to employ the defined model giving the example of international road haulage in the Republic of Serbia. The application led to a proposal for policy instruments which could have the highest impact on the increase of energy efficiency in this sector and which will be considered further in detail during the policy formulation process.

Sustainable passenger road transport scenarios to reduce fuel consumption, air pollutants and GHG (greenhouse gas) emissions in the Mexico City Metropolitan Area
Energy, volume 66, page 624-634, 2014
https://doi.org/10.1016/j.energy.2013.12.047
Author: Chavez-Baeza, C.
Author: Sheinbaum-Pardo, C.
This paper presents passenger road transport scenarios that may assist the MCMA (Mexico City Metropolitan Area) in achieving lower emissions in both criteria air pollutants (CO, NOx, NMVOC (non-methane volatile organic compounds), and PM10) and GHG (greenhouse gas) (CH4, N2O and CO2), while also promoting better mobility and quality of life in this region. We developed a bottom-up model to estimate the historical trends of energy demand, criteria air pollutants and GHG emissions caused by passenger vehicles circulating in the Mexico City Metropolitan Area (MCMA) in order to construct a baseline scenario and two mitigation scenarios that project their impact to 2028. Mitigation scenario “eff” considers increasing fuel efficiencies and introducing new technologies for vehicle emission controls. Mitigation scenario “BRT” considers a modal shift from private car trips to a Bus Rapid Transport system. Our results show significant reductions in air pollutants and GHG emissions. Incentives and environmental regulations are needed to enable these scenarios. © 2013 Elsevier Ltd.

Urban public transport speed information system for energy consumption optimization
UPB Scientific Bulletin, Series C: Electrical Engineering, volume 76, issue 1, page 177-188, 2014
Author: Corneliu, M.A.
Author: Halangau Andreica, A.M.
In this paper it is presented a solution for optimizing the energy consumption of urban public transport electric vehicles (EV) by real-time modelling of speed. ISOTEC (Information System for Optimizing Tram/Trolley Energy Consumption) intelligent transport system calculates the vehicle’s run profile, based on information received for the Traffic Management and Control Centre (TMC) and from the Public Transport Management Center (PTMC). ISOTEC creates fluid runs, without unnecessary stops at signalized intersections or before entering passenger platforms, when these are occupied by other vehicles. The proposed solution presents novelty elements regarding the real time modelling of urban public vehicle run profile with the help of computing techniques.

Research on the benefit evaluation of energy saving and emission reduction of drop-and-pull transport
Applied Mechanics and Materials, volume 505-506, page 554-557, 2014
https://doi.org/10.4028/www.scientific.net/AMM.505-506.554
Author: Tao, W.J.
Author: Zhan, B.
Author: Wang, M.
Along with the development of industrialization and urbanized advancement, the highway transportation profession is increasingly important in the economy and society. However, it will lead to issues such as energy consumption and environmental pollution, which restricts the sustainable development of economy, society, environment and other resources. Therefore, optimizing transportation form of the road transport, strengthening energy conservation management, is of great practical significance to improve the efficiency of energy utilization, to protect environment, to facilitate the sustainable development of society. This article combined with the relationship between drop-and-pull transport and energy saving and emission reduction, used the analytic hierarchy process and fuzzy comprehensive evaluation model to evaluate the effectiveness of energy saving and emission reduction of drop-and-pull transport. © (2014) Trans Tech Publications, Switzerland.

Thinking of comprehensive energy-saving system construction for urban rail transit
Applied Mechanics and Materials, volume 505-506, page 405-409, 2014
https://doi.org/10.4028/www.scientific.net/AMM.505-506.405
Author: Liang, J.K.
Author: Liu, Z.G.
Author: Huang, Y.C.
The high energy consumption of the current urban rail transit industry, high efficiency energy saving measures must be taken. This paper entity from the traction energy consumption, building structure and operating equipment aspects of the current situation, described the energy saving strategies. Aiming at the present problems existing in energy saving practice, this article puts forward the comprehensive energy saving system which contains “optimization design in planning period, low resource consumption in construction period, energy saving work in operation period”. Above all, implement energy saving practice at every concrete work of reaching. © (2014) Trans Tech Publications, Switzerland.

The impact of the economic crisis and policy actions on GHG emissions from road transport in Spain
Energy Policy, 2014
https://doi.org/10.1016/j.enpol.2014.07.020
Author: Sobrino, N.
Author: Monzon, A.
Road traffic is the greatest contributor to the carbon footprint of the transport sector and reducing it has become one of the main targets of sustainable transport policies. An analysis of the main factors influencing greenhouse gas (GHG) emissions is essential for designing new energy- and environmentally efficient strategies for the road transport. This paper addresses this need by (i) identifying factors which influence the carbon footprint, including traffic activity, fuel economy and socioeconomic development; and (ii) proposing a methodological framework which uses Modified Laspeyres Index decomposition to analyze the effect of important drivers on the changes in emissions of road transport in Spain during the period from 1990 to 2010. The results demonstrate that the country’s economic growth has been closely linked to the rise in GHG emissions. The innovative contribution of this paper is the special analysis of the changes in mobility patterns and GHG emissions during the economic crisis, when, for the first time, Spanish road traffic emissions decreased. The reduction of road transport and improved energy efficiency has been powerful contributors to this decrease, demonstrating the effectiveness of energy-saving measures. On the basis of this analysis, several tailored policy recommendations have been suggested for future implementation. © 2014 Elsevier Ltd.

A review of sustainable sea-transport for Oceania: Providing context for renewable energy shipping for the Pacific
Marine Policy, volume 43, page 283-287, 2014
https://doi.org/10.1016/j.marpol.2013.06.009
Author: Nuttall, P.
Author: Newell, A.
Author: Prasad, B.
Author: Veitayaki, J.
Author: Holland, E.
This paper summarises research and options for sustainable sea transport in Oceania with a focus on domestic shipping. This debate is situated initially within the context of the current Pacific domestic shipping scenario, a region of minute economies connected by some of the longest sea transport routes in the world. All current options are fossil fuel powered and increasingly uneconomic and unsustainable. Many routes are marginal or unviable and a vicious cycle of old ships replaced with old ships prevails. Although a central and essential issue of many Pacific communities, the option of pursuing sustainable sea transport is currently invisible within the policy space at all levels. Various renewable energy options are possible and increasingly available. Recent research finds that these have strong potential for providing benefits across multiple wellbeings. The barriers to pursing this agenda are complex and poorly understood but are perceptual and institutional more than technological. A small number of critical experiments during the last oil crisis provide critical lessons and direction. © 2013 Elsevier Ltd.

Application of a rule-based decision support system for improving energy efficiency of passive temperature-controlled transports
Advances in Intelligent Systems and Computing, volume 262, page 27-40, 2014
https://doi.org/10.1007/978-3-319-04630-3_3
Author: Haasis, H.-D.
Author: Wildebrand, H.
Author: Barz, A.
Author: Kille, G.
Author: Kolmykova, A.
Author: Schwarz, L.
Author: Wunsch, A.
A significant proportion of the flow of goods is transported and handled temperature-controlled. Some of these transports are carried out with an active temperature control, while other goods are transported within the scope of a passive temperature control. The project SMITH focuses the issue of passive temperature control using the example of an aluminium producer in Germany which organizes transports of liquid aluminium. The liquid aluminium and the corresponding crucibles need to be heated in a way, which guarantees the customer a delivery in a proper processing temperature. Setting the temperature is currently based on experience. The aim of SMITH is to improve the energy efficiency of passive temperature-controlled logistics. The software predicts the optimum temperature based on factors such as weather conditions. A transfer of the solution to other temperature-controlled transports enables huge energy and CO2 savings and is an important contribution of the logistics industry to climate protection. © Springer International Publishing Switzerland 2014.

Assessing the energy impact of traffic management and ITS technologies
21st World Congress on Intelligent Transport Systems, ITSWC 2014: Reinventing Transportation in Our Connected World, 2014
Author: Sokolov, V.
Author: Karbowski, D.
Author: Kim, N.
In this paper, we present a design for a tool that allows estimating the energy impacts of traffic management strategies and ITS technologies such as variable speed signs, variable message signs, adaptive cruise control, etc. The framework presented relies on two major components, one is the integrated transportation system simulator and the second is the powertrain simulator. For the transportation system simulator we propose using the POLARIS software recently developed at Argonne along with a commercial traffic flow simulator VISSIM. For the powertrain simulator we used AUTONOMIE, also developed at Argonne. We demonstrate the proposed approach with a simplified setup in which vehicle trips are fed into VISSIM and the resulting speed profiles are used to estimate the energy consumed. We demonstrate the approach using by simulating traffic flows on a stretch of highway with on- and off-ramps. We consider two scenarios, unmanaged, when both trucks and cars use all the lanes of the highway and managed, under which one of the highway lanes is a dedicated lane for truck traffic and trucks are forming platoons. We provide the numerical results of the experiment at the end of the paper.

CO2 mitigation in the road transport sector in thailand: Analysis of energy efficiency and bio-energy
Energy Procedia, volume 52, page 131-141, 2014
https://doi.org/10.1016/j.egypro.2014.07.063
Author: Sritong, N.
Author: Promjiraprawat, K.
Author: Limmeechokchai, B.
Road transport is the major mode in the transport sector in Thailand, which accounted for about 78% of the total energy consumption in the transport sector. This study investigates the effect of two scenarios of realistic and idealistic scenarios in three actions: 1) electric vehicles, 2) fuel switching and 3) modal shift to reduce energy demand and CO2 emission during 2010 - 2030. This study employs the Long-range Energy Alternative Planning (LEAP) model to estimate energy demand and CO2 emission in Thai road transport sector. Energy demand in the road transport will increase from 19,221 ktoe in 2010 to 42,852 ktoe in 2030 while CO2 emission increases from 42,852 kt-CO2 in 2010 to 80,717 kt-CO2 in 2030. Finally, the energy consumption and CO2 emission in realistic scenario is reduced to 34,998 ktoe and 71,355 kt-CO2, respectively while in idealistic scenario they are reduced to 32,116 ktoe and 62,179 kt-CO2 in 2030, respectively. © 2014 Published by Elsevier Ltd. Bio-Energy; CO2 Mitigation; Energy Efficiency; LEAP Model; Road Transport.

Commuter route optimized energy management of hybrid electric vehicles
IEEE Transactions on Intelligent Transportation Systems, volume 15, issue 3, page 1145-1154, 2014
https://doi.org/10.1109/TITS.2013.2294723
Author: Larsson, V.
Author: Johannesson Mårdh, L.
Author: Egardt, B.
Author: Karlsson, S.
Optimal energy management of hybrid electric vehicles requires a priori information regarding future driving conditions; the acquisition and processing of this information is nevertheless often neglected in academic research. This paper introduces a commuter route optimized energy management system, where the bulk of the computations are performed on a server. The idea is to identify commuter routes from historical driving data, using hierarchical agglomerative clustering, and then precompute an optimal solution to the energy management control problem with dynamic programming; the obtained solution can then be transmitted to the vehicle in the form of a lookup table. To investigate the potential of such a system, a simulation study is performed using a detailed vehicle model implemented in the Autonomie simulation environment for MATLAB/Simulink. The simulation results for a plug-in hybrid electric vehicle indicate that the average fuel consumption along the commuter route(s) can be reduced by 4%-9% and battery usage by 10%-15%.

Configurable and adaptable trucks and trailers for optimal transport efficiency
IEEE Transportation Electrification Conference and Expo, ITEC Asia-Pacific 2014 - Conference Proceedings, 2014
https://doi.org/10.1109/ITEC-AP.2014.6941146
Author: Elmer, M.
Author: Kyncl, J.
Author: Barbarino, S.
Author: Hariram, A.
Author: Wagner, S.
Today heavy duty trucks are designed and optimized towards a limited variance set of usage and for maximum payload. With European Commission's targets for reducing the consumption of fossil energy resources, increasing transport - and fuel efficiency, future trucks-trailers must be easily adaptable for each freight, load and mission. And during the operation phase, the vehicle combination automatically adjusts itself to the actual driving environment in terms of traffic situation, topology, and payload. The TRANSFORMERS project combines a modular approach for mission rightsizing by means of hybridization, truck engine downsizing and a trailer design that addresses simultaneously aerodynamics and load efficiency improvements. The overall goal is to achieve 25% energy load efficiency (in energy/km.tn) in a real world application taking into account the needs to maintain road infrastructure and traffic safety. This paper will give an introduction to the project, pre-standard for a hybrid on demand vehicle and its objectives towards greening surface transport.

Congestion as a source of variation in passenger and freight railway fuel efficiency

2014 Joint Rail Conference, JRC 2014, 2014
https://doi.org/10.1115/JRC2014-3788

Author: Fullerton, G.
Author: Shih, M.-C.
Author: DiDomenico, G.C.
Author: Dick, C.T.

Recent railway industry campaigns have highlighted the relative average fuel efficiency of freight and passenger trains as a key benefit of the railway transportation mode. These efficiencies are anticipated to increase rail market share as rising energy costs make less efficient competing modes less attractive. However, the fuel consumption and energy efficiency of a specific passenger or freight rail system, and even individual trains, depend on many factors. Changes in these factors can have various effects on the overall fuel consumption and efficiency of the system. One of these factors is the amount of congestion and delay due to increased traffic on the line. Thus, it is possible that the additional traffic anticipated to shift to the rail mode due to its energy benefits may increase congestion and actually have a negative impact on overall network energy efficiency. Such a case would tend to dampen the future shift of traffic to the rail mode. While simple train performance calculators can evaluate the energy efficiency of a train for an ideal run, more powerful train dispatching simulation software is required to simulate the performance of trains in realistic operating scenarios on congested single-track lines. Using this software, the relative impact of congestion on efficiency can be analyzed and compared to changes in factors related to fuel consumption. In this study, several factors affecting the efficiency of both passenger and freight rail systems were selected for analysis. Rail Traffic Controller (RTC), a train dispatching software, simulated representative single-track rail subdivisions to determine the performance of specific passenger and freight trains under different combinations of factor level settings. For passenger rail, the effects of traffic volume and station spacing on fuel consumption were analyzed while the effects of traffic volume and average speed were analyzed for freight rail. Each system was analyzed on level track and on territory with grades. Preliminary results suggest that passenger trains, if given priority, maintain their efficiency until large numbers of passenger trains are present on the network, while freight trains experience degradation in energy efficiency as congestion increases. These results will be used to develop a factorial experiment to evaluate the relative sensitivity of freight and passenger rail efficiency to congestion and other system parameters. The paper concludes with a brief discussion of possible technologies to improve efficiency and offset potential losses due to future congestion.

Demonstrating a bottom-up framework for evaluating energy and emissions performance of electric rail transit options
Transportation Research Record, volume 2428, page 10-17, 2014
https://doi.org/10.3141/2428-02
Author: Gbologah, F.
Author: Xu, Y.
Author: Rodgers, M.
Author: Guensler, R.
Current frameworks for analyzing emissions performance of public transportation systems use top-down approaches that can often provide useful information at the network level but can be uninformative at the project level at which the influence of route and vehicle characteristics can significantly impact emission profiles of candidate transit options. This paper describes an alternative bottom-up framework that uses second-by-second travel activity data to estimate total power consumption and related emissions for propulsion purposes with application to electric rail transit systems. The model was developed and calibrated with data from Portland, Oregon, and was supplemented with activity data from Chicago, Illinois. The results showed a predicted 1% to 8% difference in expected power consumption relative to estimates derived from the national transit database. In addition, the results highlighted how the speed profile, configuration of the train in number of cars, and mix of power generation sources could significantly vary emissions performance across different service routes. The developed framework can serve as an important tool for a transit planner or policy maker to evaluate the emissions performance of electric rail transit options. This framework has the advantage of relevance at both the network and project levels. At the project level, users can easily perform detailed sensitivity analysis on aspects of transit services such as vehicle and fuel technologies, passenger loading profiles, train size, and track profile. This framework gives transportation planners a flexible and efficient tool for emissions performance analysis.

Design of adaptive cruise control for road vehicles using topographic and traffic information
IFAC Proceedings Volumes (IFAC-PapersOnline), volume 19, page 4184-4189, 2014
Author: Gáspár, P.
Author: Németh, B.
The paper proposes the design of the speed of road vehicles, which minimizes control energy and fuel consumption while keeping travelling time and, moreover, considers the local traffic information to avoid conflicts in congestions. Topographic data and speed limits on the road are incorporated into the design of fuel efficient operation of the vehicle. Since the biased consideration of fuel consumption may lead to the reduction of speed, the traffic flow in the surroundings of the vehicle may be impaired. Thus, the information about the local traffic is an important factor considering the wider transportation system. In the paper the energy-efficient predicted cruise control strategy is presented, which is able to adapt to the motion of the surrounding vehicles. In this way a balance between the designed speed and the flow of the local traffic can be guaranteed. © IFAC.

Effects of longer heavy vehicles on traffic congestion

Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, volume 228, issue 6, page 970-988, 2014
https://doi.org/10.1177/0954406213493384

Author: Morrison, G.
Author: Roebuck, R.L.
Author: Cebon, D.

Two-lane, “microscopic” (vehicle-by-vehicle) simulations of motorway traffic are developed using existing models and validated using measured data from the M25 motorway. An energy consumption model is also built in, which takes the logged trajectories of simulated vehicles as drive-cycles. The simulations are used to investigate the effects on motorway congestion and fuel consumption if “longer and/or heavier vehicles” (LHVs) were to be permitted in the UK. Baseline scenarios are simulated with traffic composed of cars, light goods vehicles and standard heavy goods vehicles (HGVs). A proportion of conventional articulated HGVs is then replaced by a smaller number of LHVs carrying the same total payload mass and volume. Four LHV configurations are investigated: an 18.75 m, 46 t longer semi-trailer (LST); 25.25 m, 50 t and 60 t B-doubles and a 34 m, 82 t A-double. Metrics for congestion, freight fleet energy consumption and car energy consumption are defined for comparing the scenarios. Finally, variation of take-up level and LHV engine power for the LST and A-double are investigated. It is concluded that: (a) LHVs should reduce congestion particularly in dense traffic, however, a low mean proportion of freight traffic on UK roads and low take-up levels will limit this effect to be almost negligible; (b) LHVs can significantly improve the energy efficiency of freight fleets, giving up to a 23% reduction in fleet energy consumption at high take-up levels; (c) the small reduction in congestion caused by LHVs could improve the fuel consumption of other road users by up to 3% in dense traffic, however in free-flowing traffic an opposite effect occurs due to higher vehicle speeds and aerodynamic losses; and (d) underpowered LHVs have potential to generate severe congestion, however current manufacturers’ recommendations appear suitable.

Energy-efficient train operation in urban rail transit using real-time traffic information
IEEE Transactions on Intelligent Transportation Systems, volume 15, issue 3, page 1216-1233, 2014
https://doi.org/10.1109/TITS.2013.2296655
Author: Gu, Q.
Author: Tang, T.
Author: Cao, F.
Author: Song, Y.-D.
Energy-efficient train operation represents an important issue for daily operational urban rail transit. Most energy-efficient train operation strategies are normally planned according to a timetable, which is designed by offline traffic information. In this paper, a new energy-efficient train operation model based on real-time traffic information is proposed from the geometric and topographic points of view through a nonlinear programming method, leading to an energy-efficient driving strategy with real-time interstation running time monitored by the automatic train supervision system. The novelty of this work lies not only in the establishment of a new model for energy-efficient train operation but also in the utilization of combining analytical and numerical methods for deriving energy-efficient train operation strategies. More specifically, the energy-efficient operation model is built based on trajectory analysis when the energy-efficient optimal controls are applied, from which an energy-efficient reference trajectory is obtained under the running time and distance constraints, in which the nonlinear programming method is utilized. In contrast to most existing methods, the proposed model turns out to be a small-scale problem, and the difficulties of solving partial differential equations or the process of predetermining and reiteratively calculating some key factors as traditionally involved are avoided. Thus, it is more feasible to implement the strategy and easier to make real-time adjustment if needed. The comparative analysis and the simulation verification with the actual operating data confirm the effectiveness of the proposed method. With the proposed method, some delayed trains are able to maintain punctuality at the next station and sometimes even reducing energy consumption.

Energy for transport
Annual Review of Environment and Resources, volume 39, page 295-325, 2014
https://doi.org/10.1146/annurev-environ-031913-100450
Author: Figueroa, M.
Author: Lah, O.
Author: Fulton, L.M.
Author: McKinnon, A.
Author: Tiwari, G.
Global transportation energy use is steeply rising, mainly as a result of increasing population and economic activity. Petroleum fuels remain the dominant energy source, reflecting advantages such as high energy density, low cost, and market availability. The movement of people and freight makes a major contribution to economic development and social well-being, but it also negatively impacts climate change, air quality, health, social cohesion, and safety. Following a review published 20 years ago in the Annual Review of Environment and Resources (then named the Annual Review of Energy and the Environment) by Lee Schipper, we examine current trends and potential futures, revising several major global transport/energy reports. There are significant opportunities to slow travel growth and improve efficiency. Alternatives to petroleum exist but have different characteristics in terms of availability, cost, distribution, infrastructure, storage, and public acceptability. The transition to low-carbon equitable and sustainable transport will take time but can be fostered by numerous short- and medium-term strategies that would benefit energy security, health, productivity, and sustainability.

Energy-sustainable traffic signal timings for a congested road network with heterogeneous users
IEEE Transactions on Intelligent Transportation Systems, volume 15, issue 3, page 1016-1025, 2014
https://doi.org/10.1109/TITS.2013.2291612
Author: Ge, X.-Y.
Author: Li, Z.-C.
Author: Lam, W.H.K.
Author: Choi, K.
This paper proposes a novel model to address the energy-efficient traffic signal timing problem for a congested road network with heterogeneous users. In the proposed model, two types of agents, i.e., the authority and road users, are considered together with the interaction between traffic signal settings and energy policy (e.g., fuel surcharges). To model the route choice behavior of heterogeneous users, a multiclass stochastic traffic network equilibrium problem that considers vehicle delays at signalized intersections and travel demand elasticity is described and formulated as a variational inequality formulation. The authority aims to maximize social welfare of the transportation system by optimizing the traffic signal timings and fuel surcharges. A simulated-annealing-based solution algorithm is developed to solve the proposed model. The findings show that the implementation of the fuel surcharge policy can cause spatial and social inequity issues. © 2000-2011 IEEE.

Evolution of optimal control for energy-efficient transport
IEEE Intelligent Vehicles Symposium, Proceedings, page 1121-1126, 2014
https://doi.org/10.1109/IVS.2014.6856455
Author: Gaier, A.
Author: Asteroth, A.
An evolutionary algorithm is presented to solve the optimal control problem for energy optimal driving. Results show that the algorithm computes equivalent strategies as traditional graph searching approaches like dynamic programming or A*. The algorithm proves to be time efficient while saving multiple orders of magnitude in memory compared to graph searching techniques. Thereby making it applicable in embedded applications such as eco-driving assistants or intelligent route planning. © 2014 IEEE.

How fuel prices determine public transport infrastructure, modal shares and urban form
Urban Climate, volume 10, issue P1, page 63-76, 2014
https://doi.org/10.1016/j.uclim.2014.09.003
Author: Creutzig, F.
Urban form and transportation infrastructure mutually influence each other. For example, dense Hong Kong is served by a viable and efficient public transit network, whereas many sprawled US cities are best served with automobiles. Here we present a simple model of a mono-centric city with two modes, public transit and automobiles, and transport infrastructure investments. The contribution to the literature is two-fold. First, adding to urban economic theory, we analyze how public transport costs are endogenously determined by fuel price and urban form if an urban planner provides the infrastructure. But a private mass transport provider would underinvest into public transport infrastructure. Second, adding to the ongoing discussion on urban transport and energy use, this two-modal model can help to explain empirical observations on urban form, transport CO<inf>2</inf> emissions and modal share, emphasizing the causal role of transport costs for urban form. The results encourage further research in the economics of sustainable and energy-efficient cities. © 2014 Elsevier B.V.

Impact assessment for cooperative urban traffic management applications based on microscopic traffic flow simulation
21st World Congress on Intelligent Transport Systems, ITSWC 2014: Reinventing Transportation in Our Connected World, 2014
Author: Lüßmann, J.
Author: Vreeswijk, J.
Author: Van Katwijk, R.
Author: Blokpoel, R.
Author: Fullerton, M.
The EU FP7 project eCoMove created an integrated solution for more energy efficient road transport based on cooperative technology. The project's core concept assumed that there is theoretical minimum energy consumption achievable with the "perfect eco-driver" travelling through the "perfectly eco-managed" road network. Microscopic traffic flow simulation played an important role for the assessment of traffic efficiency and energy efficiency as only a few vehicles could be equipped with the eCoMove System in the real world. The simulations were performed for different test sites, application combinations, traffic demands and penetration rates. This paper gives an overview of the test sites, the traffic management applications, the simulation environment used and presents conclusions from the simulation studies.

Impacts of energy saving strategies (ESSs) on rail services and related effects on travel demand
WIT Transactions on the Built Environment, volume 135, page 709-720, 2014
https://doi.org/10.2495/CR140591
Author: Corapi, G.
Author: De Martinis, V.
Author: Placido, A.
Author: De Luca, G.
In railway systems, the evaluation of specific operating conditions and their impact on travel demand plays a key role both in planning and managing rail services. In this paper, we focus on the implementation of some energy saving strategies (ESSs) through the definition of energy-efficient speed profiles and estimate their effects on travel demand. In particular, speed profiles for ESSs need extra time for their implementation and hence entail a reduction in line performance. The definition of optimal speed profiles requires the use of optimisation procedures which can be formulated by considering motion parameters as control variables and energy consumption as the performance to be optimised (minimised), with respect to the available time. The proposed methodology is applied in the case of a real metro line, showing differences in user generalised costs, in order to provide additional information for rail operators which may allow evaluation of the best strategies to be adopted.

Improving energy efficiency of public transport bus services by using multiple vehicle types
Transportation Research Record, volume 2415, page 65-71, 2014
https://doi.org/10.3141/2415-07
Author: Hassold, S.
Author: Ceder, A.
Public transport can provide an environmentally friendly transportation alternative to private cars. However, resources are not always used optimally, and the efficiency of operation might be improved by altering timetables and vehicle schedules. A case in which multiple vehicle types were inserted into even-headway timetables was developed and examined for better balancing of the fluctuations of passenger loads. This examination focused on the benefits derived in energy efficiency on top of other advantages. A multiobjective optimization was used to determine timetables that would minimize both total passengers' waiting time and total empty-seat minutes on the vehicles. Sets of these Pareto-optimal timetables were then used to determine optimal vehicle schedules for the vehicle types used. The methodology was applied to a real-life case study from Auckland, New Zealand. Results showed that timetables with multiple vehicle types could increase passenger occupancy of the vehicles by 19% and thus could reduce total energy consumption. These results were attained without any increase of the total passenger waiting time and fleet size.

Influencing factors on agricultural transports and their effect on energy consumption and average speed
Agricultural Engineering International: CIGR Journal, issue SPEC. ISSUE, page 60-70, 2014
Author: Götz, S.
Author: Zimmermann, N.
Author: Engelhardt, D.
Author: Bernhardt, H.
This article deals with the importance of transportation in agriculture, focusing on energy consumption and average speed of different agricultural transport vehicles. Transportation of goods is an important section of both logistics and agricultural production; therefore this article concentrates on the linkage of these two fields of study - agriculture and logistics. Against this background, current trends in logistics and their significance for and impact on agriculture are defined first. The presented data were collected via a road trial comparing agricultural transport vehicles to those commonly deployed in road haulage. The advantages of the well-established tractor lie - of course - in its high cross-country mobility and the many resulting fields of application on agricultural production. The off-road attributes of the tractor combined with the high level of soil protection are characteristics highly in its favor, especially when applying a single phase harvesting system. With multiphase transport chains on the other hand, the deployment of trucks can be the sensible choice because of their higher average speed and lesser fuel consumption compared to the tractor. Furthermore, the motorization of the tractor is a factor to be considered when choosing the right transport system, since a comparison between two forms of motorization showed clear differences in their road performance.

Integrated urban transport and distributed systems for urban mobility: A convergence of ideas in sustainable transport?

Australasian Transport Research Forum, ATRF 2012 - Proceedings, 2014

Author: Glover, L.

Sustainable transport is concerned with the provision of mobility for people and goods with low negative environmental and social impacts. Over several decades a number of approaches, concepts, and tools have been developed to assist decision-makers in the public and private sectors in promoting sustainable transport. Integrated urban transport is a concept with a broad interpretation. It can refer to different scales and phenomena, including the integration of services within modes, integration between different modes, and the integration of land use and transport planning. Successful integration can reduce the environmental and social costs of transport, such as by promoting increased public transport use, allowing seamless public transport journeys, reducing travel demand, and improving per capita vehicle energy efficiency. Distributed system concepts have been taken up in several industrial sectors in response to the limitations of highly centralised approaches, notably in electricity generation and supply systems, water and wastewater infrastructure, and in coordinated computer networks. Several recent proposals for sustainable transport appear to evoke distributed systems concepts, such as the promotion of diverse travel choices, on-demand public transport, public bicycles, and liftsharing services. This paper aims to consider whether integrated urban transport concepts and distributed systems for urban mobility are complementary, overlapping, or contradictory ideas. Outputs of this paper could contribute to the broader debate over sustainable transport.

Life-cycle energy implications of different residential settings: Recognizing buildings, travel, and public infrastructure

Energy Policy, volume 68, page 232-242, 2014
https://doi.org/10.1016/j.enpol.2013.12.062

Author: Nichols, B.G.
Author: Kockelman, K.M.

The built environment can be used to influence travel demand, but very few studies consider the relative energy savings of such policies in context of a complex urban system. This analysis quantifies the day-to-day and embodied energy consumption of four different neighborhoods in Austin, Texas, to examine how built environment variations influence various sources of urban energy consumption. A microsimulation combines models for petroleum use (from driving) and residential and commercial power and natural gas use with rigorously measured building stock and infrastructure materials quantities (to arrive at embodied energy). Results indicate that the more suburban neighborhoods, with mostly detached single-family homes, consume up to 320% more embodied energy, 150% more operational energy, and about 160% more total life-cycle energy (per capita) than a densely developed neighborhood with mostly low-rise-apartments and duplexes. Across all neighborhoods, operational energy use comprised 83 to 92% of total energy use, and transportation sources (including personal vehicles and transit, plus street, parking structure, and sidewalk infrastructure) made up 44 to 47% of the life-cycle energy demands tallied. Energy elasticity calculations across the neighborhoods suggest that increased population density and reduced residential unit size offer greatest life-cycle energy savings per capita, by reducing both operational demands from driving and home energy use, and from less embodied energy from construction. These results provide measurable metrics for comparing different neighborhood styles and develop a framework to anticipate energy-savings from changes in the built environment versus household energy efficiency.

Measuring the impact of urban policies on transportation energy saving using a land use-transport model
IATSS Research, volume 37, issue 2, page 98-109, 2014
https://doi.org/10.1016/j.iatssr.2014.03.002
Author: Kii, M.
Author: Akimoto, K.
Author: Doi, K.
Various projects all over the world are attempting to build smart cities in hopes of achieving energy-efficient and livable communities, but most of them are aiming to fulfill their goals technologically. However, the energy efficiency and livability of a city are affected by not only these technological factors but also urban structures that encompass residential areas, offices, transportation networks, and other facilities. Urban policies intervene in transportation and land-use conditions and thereby change how citizens consume energy and go about their daily lives as the actors in the urban system alter their behavior. This means that energy efficiency and quality of life share close ties. Assessments of urban policies thus need to consider the reactions of actors to the intervention.This study demonstrates the applicability of a land-use transport model to the assessment of urban policies for building smart communities. First, we outline a model that explicitly formulates the actors' location-related decisions and travel behavior. Second, we apply this model to two urban policies - road pricing and land-use regulation - to assess their long-term impact on energy saving and sustainability using the case of a simplified synthetic city. Our study verifies that, under assumed conditions, the model has the capacity to assess urban policies on energy use and sustainability in a consistent fashion.

Model-based approach for estimating energy used by traffic flows on motorways with ITS
IET Intelligent Transport Systems, volume 8, issue 7, page 598-607, 2014
https://doi.org/10.1049/iet-its.2013.0132
Author: Bottero, M.
Author: Dalla Chiara, B.
Author: Deflorio, F.
Author: Franco, G.
Author: Spessa, E.
Monitoring traffic flows on road infrastructures has increasingly become a more common practice. Diverse types of sensors and devices to count and classify vehicles have been tested and installed on European roads in recent years, contributing to the growing availability of several databases. Moreover, methodologies to assess energy consumption for transport and the consequent emissions require several data sets, which are not always available. Consequently, it is an interesting endeavour to investigate an approach that can model energy dissipation, beginning from simple mechanical rules and traffic monitoring data and related parameters. The presence of ITS can have a positive influence on traffic flows. Beginning with this assumption, this study presents different scenarios based on actual and simulated data to estimate energy used in vehicular flow and how the energy consumed can change when the vehicular flow changes due to the influence of an ITS application. The approach presented in this study accounts to use both a mechanical model, providing a simple evaluation of energy consumption, and a traffic micro-simulation approach; both cases begin from the measurement of classical traffic flow parameters.

Multi-criteria analysis of optimal signal plans using microscopic traffic models
Transportation Research Part D: Transport and Environment, volume 32, page 1-14, 2014
https://doi.org/10.1016/j.trd.2014.06.013
Author: Ma, X.
Author: Jin, J.
Author: Lei, W.
Increasing concerns on environment and natural resources, coupled with increasing demand for transport, put lots of pressure for improved efficiency and performance on transport systems worldwide. New technology nowadays enables fast innovation in transport, but it is the policy for deployment and operation with a systems perspective that often determines success. Smart traffic management has played important roles for continuous development of traffic systems especially in urban areas. There is, however, still lack of effort in current traffic management and planning practice prioritizing policy goals in environment and energy. This paper presents an application of a model-based framework to quantify environmental impacts and fuel efficiency of road traffic, and to evaluate optimal signal plans with respect not only to traffic mobility performance but also other important measures for sustainability. Microscopic traffic simulator is integrated with micro-scale emission model for estimation of emissions and fuel consumption at high resolution. A stochastic optimization engine is implemented to facilitate optimal signal planning for different policy goals, including delay, stop-and-goes, fuel economy etc. In order to enhance the validity of the modeling framework, both traffic and emission models are fine-tuned using data collected in a Chinese city. In addition, two microscopic traffic models are applied, and lead to consistent results for signal optimization. Two control schemes, fixed time and vehicle actuated, are optimized while multiple performance indexes are analyzed and compared for corresponding objectives. Solutions, representing compromise between different policies, are also obtained in the case study by optimizing an integrated performance index. © 2014 Elsevier Ltd.

Optimizing the energy efficiency of electric transportation systems operation using a genetic algorithm
International Review of Electrical Engineering, volume 9, issue 4, page 783-791, 2014
Author: Boschett, G.
Author: Mariscotti, A.
Energy consumption of a rail transit system depends on many parameters. One of the most effective methods of reducing energy consumption in a rail transit system is optimizing the speed profile of the trains along the route. A genetic algorithm (GA) based approach is proposed to search for the optimal train speed trajectory, given a journey time constraint, and its effectiveness is shown by simulation results. The proposed approach includes realistic system modeling using an integrated electromechanical simulation model to calculate train energy consumption and travelling time under different operating conditions, inter-station distances, track profiles.

Optimizing train speed profiles to improve regeneration efficiency of transit operations
2014 Joint Rail Conference, JRC 2014, 2014
https://doi.org/10.1115/JRC2014-3795
Author: Tang, H.
Author: Wang, Q.
Author: Dick, C.T.
With reduced environmental impact becoming an increasingly important benefit of the rail transportation mode, continual improvement in efficiency and reduced energy consumption has become a major concern to rail transit operators. For electrified rail transit operations, regenerative braking is one practical way for saving energy because it enables the kinetic energy of a train to be transmitted via the overhead catenary wire or third rail for use by adjacent trains. Although various regeneration technologies have been introduced, work is still needed to improve energy recovery efficiency. This paper focuses on energy recovery efficiency from an operational point of view. In a mass transit system, there are two operating modes for two consecutive trains: the following train either systematically applies the same speed profile as the leading train, or the following train adjusts its speed to a different speed profile according to the position, speed and regeneration potential of the leading train. With operations synchronized to reuse energy, the latter mode achieves better energy recovery efficiency than the former one. Based on the above understanding, the objective of this paper is to develop the optimal speed profile for a following train in order to minimize pantograph voltage fluctuations and improve energy recovery efficiency. Dynamic programming is applied to this problem in order to optimize the speed profile for a set of given infrastructure and train characteristics. Simulation results with Visual C++ demonstrate that the algorithm can provide an optimal operational strategy with better energy performance while satisfying safety constraints and comfort criteria. Based on this work, energy optimization potentials with different headways are discussed in the case study. This research will facilitate development of on-board train control system logic or system energy analysis that will reduce energy consumption and provide rail transit operators with operational cost savings.

Promotion of freight mobility in Milan: Environmental, energy and economical aspects
2013 World Electric Vehicle Symposium and Exhibition, EVS 2014, 2014
https://doi.org/10.1109/EVS.2013.6914715
Author: Menga, P.
Author: Buccianti, R.
Author: Bedogni, M.
Author: Moroni, S.
In order to improve air quality in the Controlled Traffic Zone ‘Area C’ of Milan, in addition to the rules already in force, two topics now under consideration by the municipality are the increase of car-sharing and measures to stimulate the use of electric vehicles, including their adoption for the last-mile delivery of goods. The paper presents the evaluation of the potential benefits of electric vehicles, in particular for the case of goods delivery. Comparisons to present i.c.e. based vehicles are presented in terms of economical aspects (from the point of view of the end user and of the Country), energy consumption and pollution impact (both local and global). Also the contribution to costs and pollution of two-wheels motor vehicles is taken into consideration in order to give a more complete overview of the different traffic segments.

Quantitative analysis for the development of maritime transport efficiency
Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), volume 8631 LNCS, issue PART 2, page 543-552, 2014
https://doi.org/10.1007/978-3-319-11194-0_47
Author: Zhang, W.
Author: Wu, Z.
Author: Liu, Y.
Author: Li, Z.
This paper analyzes the maritime transport efficiency which include ships' quantitative analysis of four main kinds. Nearly 90 percent of the world total trade of goods measured in tons are moved by sea. And vessel's transport efficiency is higher than the other vehicles, so ship is regarded as an epitome of science and technology. The development of ships is achieved by technological innovation, the innovation is the fundament, Now using the principle of transport efficiency to analyze the historical development of transport vehicles is needed.Transport efficiency is the energy efficiency used for transport facilities, which is expressed as (presented eqution). In the historical time, ship's size, speed and engine output power have changed largely. And this paper will discuss base on the basic formulas and statistics of four kinds of ships: bulk carriers, LNG carriers,oil tankers and container ships. © 2014 Springer International Publishing Switzerland.

Real-time trajectory planning for rail transit train considering regenerative energy
2014 17th IEEE International Conference on Intelligent Transportation Systems, ITSC 2014, page 2738-2742, 2014
https://doi.org/10.1109/ITSC.2014.6958128
Author: Qu, J.
Author: Feng, X.
Author: Wang, Q.
This paper proposes an energy efficient driving strategy considering regenerative braking energy, arbitrary speed limits, variable grade profiles and curve radius. In actual operation, the reference speed curve of the Automatic Train Operation (ATO) system needs on-line recalculation when the operation circumstances change, such as delay or a temporary speed limit. An energy-efficient operation optimization model with arbitrary feasible initial and final velocities is built, and the optimal operation modes are obtained by means of the maximum principle. When the braking energy is fully recovered, the speed-holding operation mode is proved to be the most energy-saving regime. Then a numerical algorithm is presented to construct the energy saving speed curve for a given time with the consideration of speed limits. The feasibility of the algorithm is verified through the case study of Shenzhen Metro Line 1. With the flexibility of arbitrary initial and final speed values, the presented algorithm can be applied to ATO system for real-time calculation. © 2014 IEEE.

Research on the energy rebound effect of passenger transportation in China
Energy Education Science and Technology Part A: Energy Science and Research, volume 32, issue 4, page 2151-2158, 2014
Author: Feng, F.
Recently, there has been a lot of interest in energy rebound effect. Improving energy efficiency is an important measure adopted by the Chinese government in an effort to achieve energy conservation target in the transport sector. Meanwhile, the offsetting effect of energy rebound will reduce its real energysaving potentials. A Linear Approximation of the Almost Ideal Demand System Model (LA-AIDS model) is proposed to estimate the rebound effect for passenger transportation in China. The empirical result shows that the rebound effect is 86.55%, implying that China can not simply rely on technical means to reduce energy consumption and emission.

Road freight energy efficiency and CO2 emissions in the Nordic countries
Research in Transportation Business and Management, volume 12, page 11-19, 2014
https://doi.org/10.1016/j.rtbm.2014.08.001
Author: Liimatainen, H.
Author: Arvidsson, N.
Author: Hovi, I.B.
Author: Jensen, T.C.
Author: Nykänen, L.
Nordic countries have committed to improve the energy efficiency and decrease the CO2 emissions of freight transport. The aim of this paper is to compare the energy efficiency and CO2 emissions in the road industry for the Nordic countries in 2010, in order to identify the key factors and their impact on energy efficiency and CO2 emissions. A joint analysis method was developed to compare data. Quantitative data was used to conduct a decomposition analysis for several sectors, taking several indicators into account. Statistics from Denmark, Finland, Norway and Sweden include continuous road haulier surveys, national account data and fuel consumption data. The CO2 emissions of road freight transport in the Nordic countries vary from 1.14Mt in Denmark to 2.27Mt in Sweden. While the size of the economy, measured in gross value added (GVA), is a major determinant for the emissions, the differences in transport intensity and energy efficiency also have a significant effect on the total emissions. This study is the first of its kind for the Nordic countries. Our research can be used as a first step in a continuous evaluation of the determinants of road freight CO2 emissions in the European countries.

SDP policy iteration-based energy management strategy using traffic information for commuter hybrid electric vehicles
Energies, volume 7, issue 7, page 4648-4675, 2014
https://doi.org/10.3390/en7074648
Author: Jiao, X.
Author: Shen, T.
This paper demonstrates an energy management method using traffic information for commuter hybrid electric vehicles. A control strategy based on stochastic dynamic programming (SDP) is developed, which minimizes on average the equivalent fuel consumption, while satisfying the battery charge-sustaining constraints and the overall vehicle power demand for drivability. First, according to the sample information of the traffic speed profiles, the regular route is divided into several segments and the statistic characteristics in the different segments are constructed from gathered data on the averaged vehicle speeds. And then, the energy management problem is formulated as a stochastic nonlinear and constrained optimal control problem and a modified policy iteration algorithm is utilized to generate a time-invariant state-dependent power split strategy. Finally, simulation results over some driving cycles are presented to demonstrate the effectiveness of the proposed energy management strategy.

Spatial planning and transport energy transition towards a low carbon system
DISP, volume 50, issue 3, page 20-30, 2014
https://doi.org/10.1080/02513625.2014.979040
Author: Zhao, P.
Author: Pendlebury, J.
In recent years, transport-related carbon emissions in cities have been increasingly recognized as a vital issue in relation to climate change. A transition in urban transport energy use has been called for by both politicians and the public. The use of less energy generally and greener energy if possible have been widely accepted by planners as the two goals of this transition. However, the question of whether and how we can achieve these goals through spatial planning remains debatable. This paper conducts a literature review examining the role of spatial planning in the transition in urban transport energy use. Four major aspects of spatial planning are discussed with regard to its influence on this transition: effectiveness, efficiency, equity and enforcement. Furthermore, the four main elements of the urban transport energy transition process will be addressed: instruments, individuals, institutions and the complex interactions between them. Ultimately, it is difficult to say whether spatial planning can play an efficient role in assisting the transition in urban transport energy use. However, it is clear that if it is to do so, it must be supported by proper policy instruments and enforced in a manner that changes current human practices and market conditions in the field of transport. Dealing with sociotechnical uncertainties in the process of transition is another challenge to spatial planning. More innovative approaches are needed if spatial planning practice is to assist in the transition towards a low carbon urban transport system and a low carbon city. © 2014 © 2014 ETH - Eidenössiche Technische Hochschule Zürich.

System for road vehicle energy optimization using real time road and traffic information
Energies, volume 7, issue 6, page 3576-3598, 2014
https://doi.org/10.3390/en7063576
Author: Jiménez, F.
Author: Cabrera-Montiel, W.
Nowadays, reducing the energy and fuel consumption of road vehicles is a key issue. Different strategies have been proposed. One of them is to promote Eco-driving behaviour among drivers. Most Eco-driving tips take into account only the road stretch where the vehicle is located. However, larger improvements could be achieved if information from subsequent stretches is used. The main objective of this work is to develop a system to warn the driver in real time of the optimal speed that should be maintained on every road segment in order to optimize the energy used and the fuel consumed while observing a time schedule. The system takes into account the road vertical profile, the fixed and variable speed limits and the traffic information retrieved using V2V and V2I communications. The system has been tested on real road sections with satisfactory results in fuel savings. © 2014 by the authors.

The evaluation of transportation energy efficiency: An application of three-stage virtual frontier DEA
Transportation Research Part D: Transport and Environment, volume 29, page 1-11, 2014
https://doi.org/10.1016/j.trd.2014.03.007
Author: Cui, Q.
Author: Li, Y.
In this paper, transportation energy efficiency is newly defined and its inputs and outputs are obtained through literature review. Labor input, capital input and energy input are selected as the inputs, passenger turnover volume and freight turnover volume are defined as the outputs. A new model-three-stage virtual frontier DEA (three-stage virtual frontier Data Envelopment Analysis) is proposed to evaluate transportation energy efficiencies. The case of thirty Chinese PARs (provincial administrative regions) from 2003 to 2012 is applied to verify its rationality. In the three-stage virtual frontier DEA, the reference DMU (decision-making unit) set and the evaluated DMU set are two different sets so that it can distinguish the DEA efficient DMUs. And in the evaluating process, the reference DMU set remains unchanged to assure its results more reasonable than Super DEA model. The results show that transport structure and management measures have important impacts on transportation energy efficiency. © 2014 Elsevier Ltd.

The future of sustainable transport system for Europe
AI and Society, volume 29, issue 3, page 387-402, 2014
https://doi.org/10.1007/s00146-013-0461-3
Author: Eißel, D.
Author: Chu, C.P.
The EU has launched targets for energy efficiency and the reduction in pollutant emissions in the transport sector. It establishes a framework to foster the promotion and development of a market for clean vehicles. In 2011 the EU passed a “Roadmap to a single European transport area-Towards a competitive and resource efficient transport system”. This roadmap includes 40 concrete initiatives for the next decade to build a competitive transport system that will increase mobility, remove major barriers in key areas and fuel growth and employment. The objectives concern well-functioning passenger and freight links that are vital for European undertakings and citizens. At the same time, the proposals will dramatically reduce Europe’s dependence on imported oil. All in all the EU transport policies aim at fostering clean, safe and efficient travel throughout Europe, which requires innovations in many areas-like safe electric cars-and needs to engage not just the users but the entire transport industry facing drastic structural changes. © 2013 Springer-Verlag London.

The IMOSMID project: Increasing energy efficiency by identification, assessment and use of eco-friendly technologies and management plans for public and private transport
WIT Transactions on Ecology and the Environment, volume 179 VOLUME 2, page 1033-1044, 2014
https://doi.org/10.2495/SC130882
Author: Buzzoni, L.
The European Project IMOSMID (Integrated MOdel for Sustainable Management of Mobility in Industrial Districts) is strongly focused on energy efficiency and carbon saving issues, showing new technologies and devices (fuel cells, charging points from RE, etc.) which could facilitate the introduction of electrical vehicles not only for the inner cities, but also for metropolitan areas, improving its features through the increase of autonomy and availability of the vehicle. IMOSMID aims at reducing carbon emissions by identification, assessment and exchange of innovative technologies and management plans for sustainable transport, by strongly focusing on energetic aspects as well as taking into account environmental and sanitary aspects. The identification of optimal management models for people mobility in productive areas will serve to reduce individual and private car usage for the home-work commuting with dedicated measures particularly related to carpooling. © 2013 WIT Press.

The influence of network bottleneck on train energy consumption in railway traffic
Applied Mechanics and Materials, volume 631-632, page 737-742, 2014
https://doi.org/10.4028/www.scientific.net/AMM.631-632.737
Author: Fan, H.-Q.
Author: Li, K.-P.
Author: Jia, B.
In this paper, an improved cellular automaton model is proposed to simulate train movement by considering reaction time and coasting strategy. Our study is focused on the factors which influence the train energy consumption around network bottleneck (i.e. stations). Here the laws of the propagation of train delay are also discussed. The simulation results demonstrate that the proposed model is suitable for simulating the train movement under high speed condition. © 2014 Trans Tech Publications, Switzerland.

Transit ITS research: Dynamic bus operations
21st World Congress on Intelligent Transport Systems, ITSWC 2014: Reinventing Transportation in Our Connected World, 2014
Author: Witten, T.
Author: Alden, A.
Author: Dagerhardt, C.
Blacksburg Transit (BT) and Virginia Tech Transportation Institute (VTTI) have established a partnership for transit research and in spring of 2013, received a Federal Transit Administration (FTA) Transit Investment in Greenhouse Gas Reduction (TIGGER) grant to research dynamic bus operations. The primary aim of this research opportunity is to employ new strategies to reduce energy use and greenhouse Gas (GHG) emissions through increased operations efficiency, reliability, utilization, and passenger satisfaction. The project team is blending numerous Intelligent Transportation System (ITS) technologies to develop a pilot testing environment for newly developed transit operations software algorithms. The results of the pilot tests are anticipated to provide a cornerstone for future transit research in the field of bus transit operations.

Urban traffic Eco-Driving: A macroscopic steady-state analysis
2014 European Control Conference, ECC 2014, page 2581-2587, 2014
https://doi.org/10.1109/ECC.2014.6862403
Author: De Nunzio, G.
Author: Canudas De Wit, C.
Author: Moulin, P.
The problem of traveling at maximum energy efficiency (Eco-Driving) is addressed for urban traffic networks at macroscopic level. The scope of this paper is the analysis of the steady-state behavior of the system, given certain boundary flows conditions fixed by traffic lights timings, and in presence of a traffic control policy based on variable speed limits. The formal study is carried out on a two-cells variable length model adapted to the urban setup from previous works on highway traffic [1][2]. Informative traffic metrics, aimed at assessing traffic and vehicles performance in terms of traveling time, infrastructure utilization and energy consumption, are then defined and adapted to the new macroscopic traffic model. If congestion in a road section does not spill back or vanish, the system is stable and many different equilibrium points can be reached via variable speed limits. Efficient operation points and traffic conditions are identified as a trade-off between optimization of global traffic energy consumption, traveling time and infrastructure utilization. © 2014 EUCA.

A k-leader fuel-efficient traffic model
IEEE Intelligent Vehicles Symposium, Proceedings, page 1014-1021, 2013
https://doi.org/10.1109/IVS.2013.6629599
Author: Awal, T.
Author: Kulik, L.
Author: Ramamohanrao, K.
Optimizing travel time and energy consumption without compromising safety to attain efficient road traffic is a key goal in transport telematics. Microscopic traffic simulations are important tools to study the impact of new algorithms on road traffic. The aim of these simulations is to achieve a high degree of realism through the use of microscopic car-following models, which characterize real-time interaction among individual vehicles. These models play a vital role in Advanced Vehicle Control and Safety Systems (AVCSS) such as collision warning, adaptive cruise control, or lane guidance and in modelling simulation of safety studies and capacity analysis in transportation science. Although a range of models have been proposed to model the longitudinal interaction between adjacent vehicles due to its importance, surprisingly few comparative evaluations of the models exist. In this paper, we first identify limitations of the prominent car-following models. We then propose a k-leader fuel-efficient car-following model and show that our model is effective in terms of safety, trip times, flow and fuel efficiency. We also highlight new research challenges and important directions for further research. © 2013 IEEE.

A kind of new energy-saving algorithm to solve the multi-objective traveling salesman
Energy Education Science and Technology Part A: Energy Science and Research, volume 31, issue 1, page 633-636, 2013
Author: Liu, S.
Author: Zhou, J.
Author: Lei, J.
A kind of new energy-saving approximate algorithms by “attractor” is designed to solve the multi-objective traveling salesman problem, which can improve algorithm principle analysis. The main idea of this paper is trying to illustrate a kind of new energy-saving approximate algorithm’s thought about its application to deal with some objective problem through analysis to cite example. © Sila Science.

A study of energy efficiency of transport sector in China from 2003 to 2009
Applied Energy, volume 112, page 1066-1077, 2013
https://doi.org/10.1016/j.apenergy.2013.06.006
Author: Chung, W.
Author: Zhou, G.
Author: Yeung, I.M.H.
As one of the three high-energy consumption sectors (industry, building, and transportation) in China, the transport sector faced a devastating resource and environment challenge. The transport sector was reportedly responsible for about 15.9% of the country's total final energy consumption in 2008. This paper investigates the energy consumption and efficiency of China's transport sector from 2003 to 2009. The transport energy data of 30 China administrative regions were divided into "three-belts" (Eastern, Western, and Central areas), and the corresponding turnovers were reported and analyzed using an index decomposition analysis (Logarithmic Mean Divisia Index).The energy data and turnover of the transport sector indicated that the high growth rate of turnover results is attributed to the high growth rate of diesel, assuming that diesel is the major fuel for freight transport. The growth of diesel is the main contributor to the overall growth of energy consumption. The growth rate of gasoline has become minimal since 2006.Since 2005, all three-belt areas, with regard to the effectiveness of energy conservation policies, have continuously improved their energy efficiencies based on the results of decomposition analysis. The energy intensity effect shows that the energy conservation and efficiency policies were more effective in the Central and Western areas than that in the Eastern area. On the other hand, the regional shift effect indicates that the policies favor to the Eastern area since only its regional shift effect contributes energy savings since 2008. The energy-mix effect is insignificant, which indicates that it is not necessary to conduct CO2 emission decomposition analysis due to the redundant observations. At last, the activity effect dominates the energy consumption increase (98.05% of the accumulated total energy increase) from 2003 to 2009, which is consistent with the rapid development of transportation in China. That is, the policies in the transport sector mainly focused on the economic development but the energy efficiencies in the study period. © 2013 Elsevier Ltd.

Commuting and energy consumption: Toward an equitable transportation policy
Journal of Transport Geography, volume 33, page 240-249, 2013
https://doi.org/10.1016/j.jtrangeo.2013.09.005
Author: Modarres, A.
Like other major metropolitan areas, the urban complex that extends from Los Angeles to Orange County faces numerous transportation challenges. Daily traffic congestion, reduced productivity and loss of income, air pollution, environmental degradation and significant energy consumption are only a few outcomes of the millions of miles travelled every day on the region's highways and streets. An important response to this significant urban challenge has been the desire for further expansion of an efficient public transportation network and increasing densities in particular areas within the larger metropolitan region. In this paper, we estimate the current energy consumption patterns in various communities, arguing that policy attempts to achieve higher density and better jobs-housing balance should fully consider the social geography of our metropolitan areas and their close relationship with energy consumption patterns. © 2013 Elsevier Ltd.

Comparative analysis of external costs of different means of transport
Pomorstvo, volume 27, issue 2, page 351-360, 2013
Author: Dundovi?, ?.
Author: Juri?, M.
Author: Kolanovi?, I.
Owing to the European Union open borders, free movement of goods, services, people and capital has been enabled and the need for a fast, efficient and comfortable transport, with as low transport and external costs as possible, has necessarily increased. External costs, as transport-generated public costs, represent great threat to the environment and increasing attention has been engaged in fighting the negative impact of transport upon environment. According to the EU statistical forecasts, significant increase in transport activities may be expected within 2050, hence the adoption of the European Union Sustainable Development Strategy and a collection of Directives dealing with environmental protection from different means of transport within different traffic categories. Through various Action Programmes comprising a series of measures, the European Union Sustainable Development Strategy aims at decreasing external costs, protecting the environment and increasing traffic safety. In this accordance, the paper deals with the analysis of external costs within each particular traffic category, taking into consideration the air, water and soil pollution, noise, vibrations and the impact of certain traffic categories upon landscape and animal and plant diversity. Using the comparative analysis of external costs within different traffic categories, the research is aimed at highlighting the advantages and disadvantages of exploitation of different means of transport. The examined external cost indicators point to the complexity of examined issues and they should be systematically used for the purpose of development and continuous traffic redirection to more acceptable traffic categories in terms of environment protection, energy efficiency and safety enhancement.

CPS: An efficiency-motivated attack against autonomous vehicular transportation
ACM International Conference Proceeding Series, page 99-108, 2013
https://doi.org/10.1145/2523649.2523658
Author: Gerdes, R.M.
Author: Winstead, C.
Author: Heaslip, K.
This work describes a new type of efficiency attack that can be used to degrade the performance of automated vehicular transportation systems. Next-generation transportation technologies will leverage increasing use of vehicle automation. Proposed vehicular automation systems include cooperative adaptive cruise control and vehicle platooning strategies which require cooperation and coordination among vehicles. These strategies are intended to optimize throughput and energy usage in future highway systems, but, as we demonstrate, they also introduce new vulnerabilities. In this work we show that a typical platooning system would allow a maliciously controlled vehicle to exert subtle influence on the motion of surrounding vehicles. This effect can be used to increase the energy expenditure of surrounding vehicles by 20% to 300%. Copyright 2013 ACM.

Predictive fuel efficiency optimization using traffic light timings and fuel consumption model
IEEE Conference on Intelligent Transportation Systems, Proceedings, ITSC, page 1553-1558, 2013
https://doi.org/10.1109/ITSC.2013.6728451
Author: Guan, T.
Author: Frey, C.W.
Energy efficiency has become a major issue in trade, transportation and environment protection. While the next generation of zero emission propulsion systems are still under development, it is already possible to increase fuel efficiency in regular vehicles by applying a more fuel efficient driving behaviour. Fuel efficiency depends on vehicle specific characteristics, e.g. engine efficiency and transmission configuration. It also depends on current and future events in the environment, e.g. traffic lights or other traffic participants. This paper proposes an approach to make predictive use of traffic light timings while also incorporating knowledge about the vehicle's power-train. The optimization is largely based on dynamic programming. The results are a velocity and gear shift guidance for the driver to follow. Results based on simulations show that a system assisted driver can achieve significant fuel savings compared to an unassisted driver. © 2013 IEEE.

Research on energy optimization of multimodal transportation for automobile logistics based on genetic algorithm
Energy Education Science and Technology Part A: Energy Science and Research, volume 31, issue 3, page 1519-1524, 2013
Author: Luo, J.
With the rapid development of automobile logistics, the optimization of multimodal transportation is notable. The characteristics of multimodal transportation for automobile logistics are summed through analyzing the connotation and operational advantages. The important factors of the energy optimization, such as mileage, time, cost etc are concluded after detailed discussion. Then multi-objective energy optimization model of multimodal transportation for automobile logistics is built based on operational research, which overcoming the deficiency of many simple-objective models. Given the difficult of solution, the genetic algorithm is introduced. Finally, an example of multimodal transportation for A company is put forward, which can prove the feasibility and validity of the model. © Sila Science.

Research on the energy traffic collaborative decision model and interactive pattern for urban region
Energy Education Science and Technology Part A: Energy Science and Research, volume 31, issue 1, page 97-100, 2013
Author: Li, W.
Author: Xu, Q.
Author: Xu, K.
The problems caused by energy traffic congestion have presently become a severe issue that the urban traffics around the world faces. According to existing road conditions, one of the effective ways to solve these problems is to improve current ways on the energy traffic control and management. Under the background of biological collaborative phenomenon, some regional adjacent signal intersections are connected in to a CAN bus control network, thus a kind of immune co-evolutionary mechanism are designed to optimize regional traffic parameters, moreover, a detailed analysis and discussion is also carried out on a regional energy traffic collaborative decision model, interactive pattern and CAN protocol, so the efficiency of solving the energy traffic problems in urban central regions is effectively improved. © Sila Science.

The in-use annual energy and carbon saving by switching from a car to an electric bicycle in an urban UK general medical practice: The implication for NHS commuters
Environment, Development and Sustainability, volume 15, issue 6, page 1645-1651, 2013
https://doi.org/10.1007/s10668-013-9454-0
Author: Pierce, J.M.T.
Author: Nash, A.B.
Author: Clouter, C.A.
The UK Climate Change Act (CCA) mandates an 80 % reduction in CO2 emissions by 2050. It is estimated that 3.2 M tonnes pa CO2 results from travel-related NHS business. The acquisition of an electric bicycle to replace a car for both commuting and home visits allowed comparison of fuel use and CO2 emissions over a 4-year period. The switch to the use of the electric bicycle reduced the average annual petrol use by 329 l, the energy consumption by 3,140 kWh and the CO2 released by 748 kg a year. Wider adoption of electric bicycles in urban General Practice will contribute to the requirements of the CCA though to have a significant effect on the current estimated commuting-related carbon footprint of the NHS (0.76 MT pa) would require two-thirds of the workforce to abandon their cars in favour of electric bicycles. © 2013 Springer Science+Business Media Dordrecht.

The role of electric drive Transit technologies in reducing greenhouse gas emissions
Urban Public Transportation Systems 2013 - Proceedings of the 3rd International Conference on Urban Public Transportation Systems, page 420-429, 2013
Author: Kolpakov, A.
Author: Reich, S.L.
Accounting for 71 percent of the petroleum consumption, the U.S. transportation sector generates about one third of nation's greenhouse gas (GHG) emissions. While public transportation is a relatively small portion of the overall transportation sector it is not insignificant, producing approximately 10.9 million tons of GHG emissions annually. Reducing energy consumption and GHG emissions of public transit vehicles can provide substantial cost savings and generate significant environmental benefits. The U.S. Federal Transit Administration's (FTA) strategic vision focuses on the wide adoption of the innovative electric drive transit technologies as an ultimate alternative to traditional diesel-powered transit vehicles. To implement electric propulsion transit technologies, FTA developed the Electric Drive Strategic Plan (EDSP) that provides for a wide range of activities for the development, demonstration, and evaluation of the advanced electric drive technologies including propulsion systems, components, accessories and infrastructure. The ultimate goal of this plan is to achieve commercial availability of zero tailpipe emission, highly efficient and affordable transit vehicles by 2030, leading to drastic improvements in the energy efficiency and GHG emissions of the U.S. transit fleet. Implementing the goals of the EDSP is projected to save 4.9 billion diesel gallon equivalents of fuel and eliminate 98.7 thousand tons of NOx and 52.9 million tons of CO2 in tailpipe emissions over the period from 2010 through 2030. The implementation and wide adoption of electric drive transit technologies in the U.S. is expected to significantly reduce public transportation fuel costs and provide environmental benefits valued at $1.4 billion over the 20-year period.

Driver assistance systems for transport system efficiency: Influencing factors on user acceptance
Journal of Intelligent Transportation Systems: Technology, Planning, and Operations, volume 17, issue 3, page 245-254, 2013
https://doi.org/10.1080/15472450.2012.716646
Author: Holtl, A.
Author: Trommer, S.
A major success factor for the implementation of intelligent transportation systems (ITS) is knowledge about the user's reaction and response to such technologies. The objective of each development process is to achieve a broad acceptance among those using the system. User acceptance is a key success factor, so it should be taken into account in early development stages. This applies especially for technical solutions requiring frequent interactions, for example, to influence the driver's behavior toward a more efficient driving style. The complexity of developments in the field of ITS raises the question: At what point do users start feeling overloaded and no longer able to handle all functionalities, ultimately rejecting using them? A Europe-wide study was carried out (N = 5,807) focusing on drivers' perceptions of cooperative systems that offer assistance on fuel efficiency. The advanced driver assistance systems (ADAS) used in the study have the potential to change driving behavior in the long term and thus have a sustainable impact to reduce fuel consumption and traffic emissions. ADAS functionalities provide up-to-date traffic information, which is disseminated by traffic management to help traffic flow in a more energy efficient way. Six ADAS functions were assessed in pre-, on-, and post-trip driving situations. The chosen research framework was used to compare the users' perception using a set ofrelevant acceptance factors that were developed in this study. The results showed significant effects between acceptance factors and the influencing variables. The interrelations between acceptance factors were analyzed using a research model developed in this study. The concept proves to be suitable for studying acceptance of ITS solutions aiming to save fuel. Copyright © Taylor and Francis Group, LLC.

Road freight energy efficiency and CO2 emissions in the Nordic countries
Research in Transportation Business and Management, 2014
https://doi.org/10.1016/j.rtbm.2014.08.001
Author: Liimatainen, H.
Author: Arvidsson, N.
Author: Hovi, I.B.
Author: Jensen, T.C.
Author: Nykänen, L.
Nordic countries have committed to improve the energy efficiency and decrease the CO2 emissions of freight transport. The aim of this paper is to compare the energy efficiency and CO2 emissions in the road industry for the Nordic countries in 2010, in order to identify the key factors and their impact on energy efficiency and CO2 emissions. A joint analysis method was developed to compare data. Quantitative data was used to conduct a decomposition analysis for several sectors, taking several indicators into account. Statistics from Denmark, Finland, Norway and Sweden include continuous road haulier surveys, national account data and fuel consumption data. The CO2 emissions of road freight transport in the Nordic countries vary from 1.14Mt in Denmark to 2.27Mt in Sweden. While the size of the economy, measured in gross value added (GVA), is a major determinant for the emissions, the differences in transport intensity and energy efficiency also have a significant effect on the total emissions. This study is the first of its kind for the Nordic countries. Our research can be used as a first step in a continuous evaluation of the determinants of road freight CO2 emissions in the European countries. © 2014 Elsevier Ltd.

On the computation of the energy-optimal route dependent on the traffic load in Ingolstadt
Transportation Research Part C: Emerging Technologies, volume 36, page 97-115, 2013
https://doi.org/10.1016/j.trc.2013.07.001
Author: Kluge, S.
Author: Santa, C.
Author: Dangl, S.
Author: Wild, S.
Author: Brokate, M.
Author: Reif, K.
Author: Busch, F.
In this paper, we evaluate energy-optimal paths in the road network of Ingolstadt. The energy consumptions associated with the segments of the road network are derived from the measurements of the traffic load based on vehicle probe data, using a mesoscopic traffic model and a physical vehicle consumption model. The resulting description of the network is time-dependent, thereby reproducing the variations in time of the traffic load in Ingolstadt. The results suggest that the average energy consumption associated with energy-optimal paths is approximately 10% lower than the average energy consumption associated with fast paths. Moreover, we find that energy-optimal paths differ from fast paths in more than 90% of the considered test cases and that the density of junctions has a strong impact on the average energy consumptions. Although the time dependency of the network description leads to an increase in the computation time of optimal paths, the query times of one of the evaluated methods are promising for practical applications. © 2013 Elsevier Ltd.

Public financing of private freight rail infrastructure to reduce highway congestion: A case study of public policy and decision making in the United States
Transportation Research Part A: Policy and Practice, volume 57, page 25-36, 2013
https://doi.org/10.1016/j.tra.2013.09.007
Author: Rowangould, G.
As goods movement continues to increase it is expected to outpace infrastructure capacity in the United States. Moving a larger share of goods by rail rather than truck is a potentially cost effective part of a solution. Freight rail not only offers a substitute for truck trips but is a cleaner, more energy efficient, and safer alternative. Recently a number of private freight rail projects have received public funding. The public funds are aimed at increasing freight rail capacity with the goal of diverting some goods currently moved by truck to rail. While the benefits of moving goods by rail are relatively clear, it is unclear if public decision makers can effectively identify strategic rail investments that will achieve their policy goals. This study critically examines the analytical methods, models, and data that are commonly used to support decisions to provide public funds for private freight rail projects. This is accomplished through a case study of California's Trade Corridors Improvement Fund program which provided $680 million for 11 freight rail projects. The study's contributions include identifying critical analytical flaws and challenges affecting the benefit estimates that public funding decisions rely on. Improvements to current evaluation methods are also identified as are regulatory reforms and policy interventions that may offer more effective and reliable outcomes. © 2013 Elsevier Ltd.

Research on the causal relationship between urban density, travel behaviours, and transportation energy consumption by economic level

International Journal of Urban Sciences, volume 17, issue 3, page 362-384, 2013
https://doi.org/10.1080/12265934.2013.795754
Author: Choi, H.
Author: Nakagawa, D.
Author: Matsunaka, R.
Author: Oba, T.
Author: Yoon, J.
As motorization has progressed around the world, the scope of personal activity is widening due to private-motorized modes (PMM). And due to the increase in PMM, the degree of suburbanization has also increased, resulting in higher energy consumption for transportation as well as global warming. Many studies including that of Newman and Kenworthy have focused on the relationship between urban density and transportation energy consumption. However, the studies were in general focused on a pool of transportation data limited to one country or continent. This geological limitation restrains researchers from gaining insight into different transportation characters as well as a city's economic development status. Therefore, this research was conducted to generate a database of transportation energy consumption by PMM based on person trip data from 119 metropolitan areas in 39 countries. Considering the difference in economic levels of cities around the world, a discriminant analysis was conducted to evaluate the relationship between urban density and transportation characteristics. Based on the results of the analysis, we examined the correlation between urban density and transportation energy consumption by economic level. The analysis showed that the correlation between urban density and transportation energy consumption differs by the city's economic level. Additionally, the more the economic development, the clearer the correlation between urban density and travel behaviours becomes. © 2013 © 2013 The Institute of Urban Sciences.

The aerodynamics of freight: Approaches to save fuel by optimising the utilisation of container trains

Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit, volume 227, issue 6, page 635-643, 2013
https://doi.org/10.1177/0954409713488101
Author: Beagles, A.E.
Author: Fletcher, D.I.
Aerodynamic drag is approximately proportional to speed squared so the drag of slower moving freight trains has received less attention than that of higher-speed passenger trains. Key results of wind tunnel tests of European container trains were published in 1989 and are the basis for most assessments of drag of European container trains (American container trains usually have far higher drag due to double-stacking containers or transporting complete semi-trailers and were studied in research programmes at a similar time). The research reported here concerns a reappraisal of the European results and of more recent results obtained from the application of computational fluid dynamics modelling and the results of real-world and wind tunnel testing of the aerodynamics of container wagons. The paper presents empirical equations that can be used to predict the energy savings associated with different container loading scenarios within a fixed length train and the energy required for carrying aerodynamic features such as baffles or fairings. Illustrative examples are provided using data measured during freight operations. The effect on drag of side winds and their speed distributions are included as are representative vehicle speed profiles. Most previous authors have ignored both side winds and end effects; it is shown that the effects of these are opposite but of similar magnitudes so the results of these authors remain valid. © IMechE 2013.

Analysis on the effect factors of the passenger transportation energy Consumption Intensity
Applied Mechanics and Materials, volume 421, page 910-916, 2013
https://doi.org/10.4028/www.scientific.net/AMM.421.910
Author: Wu, X.
Author: Lang, S.
Author: Guo, X.Q.
This article proposes using passenger transportation energy intensity to measure the energy utility efficiency and energy-saving potential of the passenger transportation, uses the complete decomposition model to decompose the passenger transportation energy intensity from 1990 to 2007, and then investigate how various factors impact passenger transportation energy intensity. As is shown in the results, transportation structure increases passenger transportation energy intensity, while energy efficiency decreases it, however the decline is limited. Thus energy saving caused by adjustment of transportation structure is much more considerable. © (2013) Trans Tech Publications, Switzerland.

Rational formations of a metro train improve its efficiencies of both traction energy utilization and passenger transport
Mathematical Problems in Engineering, volume 2013, 2013
https://doi.org/10.1155/2013/643274
Author: Feng, X.
Author: Liu, H.
Author: Zhang, H.
Author: Wang, B.
Author: Sun, Q.
Based on simulations of passenger transports of two representative types of metro trains in China, this study analyzes efficiencies of energy consumption and passenger transport of a metro train in the effect of its target speed, formation scale (FS) (i.e., length and mass of the formation), relative traction capacity (RTC) (i.e., ratio of the motoring cars to all its cars), and so forth. It is found that increasing energy cost efficiency of a metro train with decreasing its target speed is evidently accelerated with reducing its RTC below 0.50 at the expense of obviously lowering its passenger transport efficiency. Moreover, if the passenger capacity of the train is sufficiently utilized, increasing its FS for the same RTC is easy to have its passenger transport efficiency improved significantly even for a meanwhile much decreased target speed with consuming energy less intensively. Therefore, metro trains in peak hours may take comparatively big FSs, relatively high target speeds, and RTCs over 0.50 to meet usually urgent and large-scale travel demands in such time. In contrast, trains in nonpeak hours ought to have small FSs, relatively low target speeds, and RTCs smaller than 0.50 for mainly avoiding energy waste. © 2013 Xuesong Feng et al.

Design for urban rail transit energy efficiency management system
Advanced Materials Research, volume 749, page 629-633, 2013
https://doi.org/10.4028/www.scientific.net/AMR.749.629
Author: Ye, J.B.
Author: Ding, Z.Y.
Author: Zhu, Q.
With the rapid development of Chinese economy and the speeding up urbanization, urban rail transit has entered a rapid development period, which results in more and more energy consumption. Meanwhile affected by energy source and environment factors, the state has implemented energy-saving emission reduction strategies in various fields, so energy efficient management for urban rail transit becomes more important. Based on the analysis of energy consumption problems in urban rail transit, the paper designs urban rail transit energy efficiency management system from the aspects of overall architecture, service architecture and application function, and provides technical support for the realization of the software system. © (2013) Trans Tech Publications, Switzerland.

Predictors of technical adoption and behavioural change to transport energy-saving measures in response to climate change
Energy Policy, volume 61, page 1055-1062, 2013
https://doi.org/10.1016/j.enpol.2013.06.002
Author: Aini, M.S.
Author: Chan, S.C.
Author: Syuhaily, O.
Energy conservation can be achieved through the adoption of technical measures or the changing of one's behaviour. A survey of 201 Malaysian public personnel was conducted to examine the predictors of these two types of transport energy-saving measures in response to climate change. The results indicated that there were significant differences in the relative acceptability of both behavioural measures with respect to gender, level of education, income, knowledge of climate change and attitude. Gender, knowledge of causes of climate change and personal norm were predictors for the acceptability of technical measures, while perceived efficacy and personal norm were the factors that influenced the acceptability of behavioural measures. The results also indicated that distinctions ought to be made between technology adoption and behaviour modifications that require lifestyle changes when assessing pro-environmental intent behaviour. The implications for theory and practice are discussed. © 2013 Elsevier Ltd.

Multicriteria analysis for the assessment of energy innovations in the transport sector
Energy, volume 57, page 160-168, 2013
https://doi.org/10.1016/j.energy.2012.12.004
Author: Scarpellini, S.
Author: Valero, A.
Author: Llera, E.
Author: Aranda, A.
In the current context of environmental and global challenges, eco-innovation has become one of the European Union's priorities. A proper measurement system is a need for the promotion, long-term decision making and progress assessment of eco-innovative activities. Public and private sectors have to refocus their activities in order to pursue maximum profits, not only economic but social and environmental. Conventional indicators and metrics for innovation measurement are not suitable because they do not take into account these three dimensions of the sustainability in a balanced analysis. After identifying the minimum requirements of a method for measuring eco-innovation, a simplified multicriteria analysis based on saving-investment curves is proposed and applied to the transport sector. This approach is suitable to determine how actions should be prioritized providing the basis for further assessments. © 2012 Elsevier Ltd.

Performance analysis of cargo-handling equipment from a green container terminal perspective
Transportation Research Part D: Transport and Environment, volume 23, page 9-11, 2013
https://doi.org/10.1016/j.trd.2013.03.009
Author: Yang, Y.-C.
Author: Lin, C.-L.
This study employs a green container terminal perspective to compare the performance of four types of cargo handling equipment used in container yards - automatic rail, rail, electric tire, and tire transtainers - based on working efficiency, energy saving performance, and carbon reductions. It is found that automatic rail and electric tire transtainers are the optimal types of green cargo handling equipment. © 2013 Elsevier Ltd.

The impact of scale on energy intensity in freight transportation
Transportation Research Part D: Transport and Environment, volume 23, page 41-49, 2013
https://doi.org/10.1016/j.trd.2013.03.008
Author: Gucwa, M.
Author: Schäfer, A.
This paper analyzes energy intensities of ships, diesel-fuelled railways, trucks, and aircraft, using publicly available data. The analysis suggests that differences in operation, not technology, explain most of the variation in energy intensity within and across modes. Among the operational characteristics, most important is the amount of cargo weight transported per vehicle and therefore the scale of the respective transportation system. It is found that each mode has a characteristic envelope in an average energy intensity versus average cargo weight diagram, and estimates of the elasticities of energy intensity with respect to load size are made. © 2013 Elsevier Ltd.

A low-carbon-based bilevel optimization model for public transit network
Mathematical Problems in Engineering, volume 2013, 2013
https://doi.org/10.1155/2013/374826
Author: Sun, X.
Author: Lu, H.-P.
Author: Chu, W.-J.
To satisfy the demand of low-carbon transportation, this paper studies the optimization of public transit network based on the concept of low carbon. Taking travel time, operation cost, energy consumption, pollutant emission, and traffic efficiency as the optimization objectives, a bilevel model is proposed in order to maximize the benefits of both travelers and operators and minimize the environmental cost. Then the model is solved with the differential evolution (DE) algorithm and applied to a real network of Baoji city. The results show that the model can not only ensure the benefits of travelers and operators, but can also reduce pollutant emission and energy consumption caused by the operations of buses, which reflects the concept of low carbon. © 2013 Xu Sun et al.

Strategic assessment of fuel taxation in energy conservation and CO2 reduction for road transportation: A case study from China

Stochastic Environmental Research and Risk Assessment, volume 27, issue 5, page 1231-1238, 2013
https://doi.org/10.1007/s00477-012-0659-9

Author: Wang, Y.
Author: Hansson, L.
Author: Sha, N.
Author: Ding, Y.
Author: Wang, R.
Author: Liu, J.

Road transportation has attracted extensive attention throughout the world because of its high energy demands and numerous externalities. Sustainable road transportation has thus become a great challenge for politicians and decision-makers all over the world. There have been a series of studies indicating that appropriate pricing of fuel can be both effective and efficient for reducing overconsumption of transport fuel. However, relatively little research has been done on fuel price approaches in developing country contexts. For a country like China, where road traffic today is growing more than in other countries, there is a strategic interest to do more economic analyses of fair and efficient pricing of fuel. In this study, we present a strategic assessment of fuel pricing in energy conservation and CO2 reduction from road transportation in China, both in a retrospective and a prospective perspective. First of all, the correlation between fuel price and road transport gasoline demand, based upon data from 1995 to 2007, was examined with an econometric model. Secondly, on basis of the elasticity model, the potential reductions with respect to fuel demand and Green House Gas (GHG) emissions as a consequence of a strategic fuel tax implementation in China were examined up to 2030. The results indicate that such strategic fuel taxation can play a considerable role in steering the growth of road transport gasoline demand, and thus also Chinese GHG emissions. © 2012 Springer-Verlag Berlin Heidelberg.

Energy for road passenger transport and sustainable development: Assessing policies and goals interactions

Current Opinion in Environmental Sustainability, volume 5, issue 2, page 152-162, 2013
https://doi.org/10.1016/j.cosust.2013.04.004

Author: Figueroa, M.J.
Author: Ribeiro, S.K.

Development that is sustainable requires an operational, efficient and safe transportation system fueled by clean, low-carbon, secure and affordable energy. The energy used in road passenger transport enables social and economic development and is the target of interventions to fight pressing urban environmental problems, energy security concerns and dangerous climate change. This review explores a systematic approach to describe interactions documented in the literature, between policies targeting energy use in road passenger transport to reduce petroleum consumption and greenhouse gas emissions and sustainable development goals. Essential, uncertain and limited interactions are mapped out as a result, their overview indicates that a full reconciliation between these policies and sustainability goals is not always attainable. The careful alignment and contextual examination of interactions between measures and goals as exemplified in this approach can help inform practical transport energy policy that better match an agenda for sustainable development. © 2013 Elsevier B.V.

Fuel efficiency and CO2 emissions of biomass based haulage in Ireland - A case study
Energy, volume 54, page 55-62, 2013
https://doi.org/10.1016/j.energy.2013.03.007
Author: Devlin, G.
Author: Klvac, R.
Author: McDonnell, K.
The purpose of this study was to analyse how biomass based haulage in Ireland performed as a measure of efficiency under 4 main criteria; distance travelled, fuel consumption, fuel consumption per unit of biomass hauled and diesel CO2 emissions. The applicability of truck engine diagnostic equipment was tested to analyse the schedule of engine data that could be recorded in real-time from a 5 axle articulated biomass truck. This identified how new on board truck technology in Ireland could be used to monitor data in real-time, specifically fuel consumption, litre/km, litre/ton and distance to allow for informed analysis of how efficient new biomass trucking operations currently are in Ireland. Fleet Management System (FMS) monitoring systems are a relatively new technology in biomass and log transport in Ireland. They are more common place in the food supply chain with refrigerated units travelling across continental Europe where food temperature and truck movements are controlled data from a central dispatch. A GPS asset tracking monitoring system was also installed on the truck over the test period to record trip log data. The BT (biomass truck) was a 5 axle, 2004 DAF XF Euro III 430hp 4*2. Initial results showed that for the BT, the average daily fuel consumption varied from 0.23 L/km to 0.47 L/km. The thresholds of travelled distance were between 20.92 km and 434.91 km respectively with average fuel consumption per tonnage of woodchips of 0.16 L/ton and 5.68 L/ton. When the total daily distance is limited to 1 load within 200 km roundtrip versus 1 load at approximately 400 km trip, the % difference in logistic cost (€/T) is 56%. Delivering 2 loads per 400 km trip shows a 5.4% decrease in logistic costs versus the Trip 1 scenario confirming the increased efficiency of a more localised transport approach. A maximum percentage difference in costs of 45% that exists between a 2 load and 1 load trip occurs for Trip 22 and Trip 5 but this increases to 72% when analysing for 2 load versus 1 load for distances over 400 km. Trip 7 and 12 are both below 50 km and seem to be the exception and to compare could possibly show an element of distortion. The closest logistic cost to Trip 12 is Trip 5 with 113% higher costs confirming how a 50 km roundtrip can impact significantly on lowering biomass transport costs. © 2013 Elsevier Ltd.

On energy efficiency of time route for wind self-propelled cargo vessels
FME Transactions, volume 41, issue 2, page 138-145, 2013
Author: Simi?, A.
Author: Radoj?i?, D.
The Energy Efficiency Design Index (EEDI) was introduced by IMO -Marine Environment Protection Committee in order to stimulate innovation and technical development of all elements that influence energy efficiency of a ship from its design phase. According to definition, it represents weight of ship's CO2 emissions per transport work. Baseline equations for EEDI were developed for several most common types of seagoing ships. This paper presents one of the first attempts to evaluate EEDI of inland-waterway, dry-cargo, self-propelled vessels. Within research that is explained in the paper, full-scale measurements were performed with the purpose to enrich the database according to which new mathematical model for power evaluation was developed. Large differences between the model- and full-scale measurements were also analysed. Finally, application of relatively large power margins for inland-waterway ships was suggested. EEDI baseline can be used as a benchmark of future ship designs. © Faculty of Mechanical Engineering, Belgrade.

The impact of sectoral economic development on the energy efficiency and CO2 emissions of road freight transport
Transport Policy, volume 27, page 150-157, 2013
https://doi.org/10.1016/j.tranpol.2013.01.005
Author: Liimatainen, H.
Author: Pöllänen, M.
The branches of economy differ in the amount and characteristics of freight transport services they require and use. Thus, different branches also have different energy efficiencies and carbon dioxide emissions from transport. Previous research has highlighted a serious lack of data inhibiting the understanding of these issues.This research presents a new method for analysing the relations between economic activity, transport demand, energy efficiency and carbon dioxide emissions with a great level of detail in different economic sectors. This is done for Finland by using the statistics that are available in many countries and are gathered in a harmonised manner in the EU member states. Hence, the method is applicable in other countries and enables in-depth comparison between countries. Understanding these relations is essential when national and also international policy targets for energy efficiency and CO2 emissions are set and evaluated.The CO2 intensity of Finnish road freight transport has decreased significantly and this development is forecasted to continue. The decrease can largely be attributed to the shift of balance from transporting bulk goods to transporting parcelled goods. This shift has been driven by diminishing importance of forest cluster and growing importance of technology cluster and trade. Despite of the reduced CO2 intensity, the energy efficiency has remained at a relatively constant level and the total CO2 emissions of road freight transport have increased.This study updates a previous national forecast for the energy efficiency and CO2 emissions of Finnish road freight transport sector for the year 2016. The new national forecast makes the outlook less positive, as the CO2 emissions are forecasted to be 8% higher than in the previous forecast. This difference is mainly due to higher estimates for average fuel consumption in some sectors. Two new branch-level forecasts are also presented and these give 20% higher CO2 emission levels than the original forecast, because of projected greater economic growth. © 2013 Elsevier Ltd.

Simulation-based genetic algorithm towards an energy-efficient railway traffic control
Mathematical Problems in Engineering, volume 2013, 2013
https://doi.org/10.1155/2013/805410
Author: Tuyttens, D.
Author: Fei, H.
Author: Mezmaz, M.
Author: Jalwan, J.
The real-time traffic control has an important impact on the efficiency of the energy utilization in the modern railway network. This study is aimed to develop an energy-efficient railway traffic control solution for any specified railway. In other words, it is expected to define suitable driving profiles for all the trains running within a specified period through the targeted network with an objective to minimize their total energy consumption. How to optimize the train synchronization so as to benefit from the energy regenerated by electronic braking is also considered in this study. A method based on genetic algorithm and empirical single train driving strategies is developed for this objective. Six monomode strategies and one multimode strategy are tested and compared with the four scenarios extracted from the Belgian railway system. The results obtained by simulation show that the multi-mode control strategy overcomes the mono-mode control strategies with regard to global energy consumption, while there is no firm relation between the utilization rate of energy regenerated by dynamic braking operations and the reduction of total energy consumption. © 2013 Daniel Tuyttens et al.

Adaptive cruise control: A behavioral assessment of following traffic participants due to energy efficient driving strategies
Lecture Notes in Electrical Engineering, volume 200 LNEE, issue VOL. 12, page 209-220, 2013
https://doi.org/10.1007/978-3-642-33838-0-19
Author: Hülsebusch, D.
Author: Salfeld, M.
Author: Xia, Y.
Author: Gauterin, F.
Improvement of vehicle safety and driving comfort have been the main objectives of driver assistance systems. Because of the general need to reduce the fuel consumption, the scope of driver assistance systems has been enlarged. Today, Adaptive Cruise Control (ACC) systems are developed which realize a more energy efficient driving style. However, energy optimal driving may lead to a trade-off between energy efficiency, vehicle safety and driving comfort. For example long coasting phases might irritate following drivers and provoke them to approach below the safety distance or overtake the ego-vehicle. This raises the question, how far energy optimized ACC affects following traffic and how the trade-off can be optimized to reach a higher acceptance. Within this work, a system to assess the driving behavior of following vehicles is developed and validated. The system is used to study the behavior of following traffic participants due to energy efficient ACC driving strategies. The results show that the median of the time gap between the following vehicle and ego-vehicle is significant lowered when driving with energy efficient ACC in comparison to driving manually. Whereas, the time to collision shows no significant difference between ACC and manually driven. At last, different concepts are presented which try to find an optimum between efficiency, safety and driving comfort.

A system dynamics model for urban transport congestion, energy consumption, and CO2 emission
Proceedings of the 26th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2013, 2013
Author: Liu, X.
Author: Dua, H.
Author: Ma, S.
With the rapid urbanization in recent ten years, the urban transport sector is greatly responsible for the increase in energy consumption and CO2 emission in China. In this paper, we construct an urban system dynamics model, including the conventional public transport system, the rail transportation system and the private transport system, and analyze the impacts of public transport system on road congestion, energy consumption and CO2 emission, even on a city's long-term development. Subsequently, we take Beijing city as a case and find that the superabundance of private cars has been the major cause of road congestion and energy consumption. Furthermore, under different scenarios of subsidies and the length of bus lanes, we suggest several demand management policies, such as improving the level of public transport service, and advocating "public transport" on behalf of "private cars", to be implemented to control road congestion, conserve energy consumption, and promote the urban sustainable development.

Applying engineering and fleet detail to represent passenger vehicle transport in a computable general equilibrium model

Economic Modelling, volume 30, issue 1, page 295-305, 2013
https://doi.org/10.1016/j.econmod.2012.08.019
Author: Karplus, V.J.
Author: Paltsev, S.
Author: Babiker, M.
Author: Reilly, J.M.
A well-known challenge in computable general equilibrium (CGE) models is to maintain correspondence between the forecasted economic and physical quantities over time. Maintaining such a correspondence is necessary to understand how economic forecasts reflect, and are constrained by, relationships within the underlying physical system. This work develops a method for projecting global demand for passenger vehicle transport, retaining supplemental physical accounting for vehicle stock, fuel use, and greenhouse gas (GHG) emissions. This method is implemented in the MIT Emissions Prediction and Policy Analysis Version 5 (EPPA5) model and includes several advances over previous approaches. First, the relationship between per-capita income and demand for passenger vehicle transport services (in vehicle-miles traveled, or VMT) is based on econometric estimates and modeled using quasi-homothetic preferences. Second, the passenger vehicle transport sector is structured to capture opportunities to reduce fleet-level gasoline use through the application of vehicle efficiency or alternative fuel vehicle technologies, introduction of alternative fuels, or reduction in demand for VMT. Third, alternative fuel vehicles (AFVs) are represented in the EPPA model. Fixed costs as well as learning effects that could influence the rate of AFV introduction are captured explicitly. This model development lays the foundation for assessing policies that differentiate based on vehicle age and efficiency, alter the relative prices of fuels, or focus on promoting specific advanced vehicle or fuel technologies.

Comparative economic efficiency, operating costs and fuel consumption rates of freight transport modes between the largest industrial cities and seaports in South Africa

Risk Governance and Control: Financial Markets and Institutions, volume 3, issue 3, page 16-27, 2013
Author: Pienaar, W.J.W.
The paper deals with aspects of efficiency within the five modes of freight transport, with special reference to the operating cost and fuel consumption rates between South Africa's largest industrial cities and seaports. In particular, the paper deals with (a) the opportunities that exist for the achievement of efficiency in freight transport; (b) the subgroups of economies that can enhance efficiency attainment in the freight transport industry; (c) prevailing cost structures, operating cost and fuel consumption rates within the five modes of freight transport; and (d) the salient economic features of the freight transport market. The research approach and methodology combine (a) a literature survey; (b) empiric research, (c) an analysis of the cost structures of freight transport operators from different modes of transport; and (d) interviews conducted with specialists in the freight transport industry.

European and United States scenarios for energy efficient traffic signal operations
20th ITS World Congress Tokyo 2013, 2013
Author: Vreeswijk, J.
Author: Barth, M.
Energy efficient traffic signal operations include the use of connected vehicle technologies to reduce fuel consumption, as well as greenhouse gas and criteria air pollutant emissions on roadway arterials by reducing idling, reducing the number of stops, reducing unnecessary accelerations and decelerations, and improving traffic flow at signalized intersections. The EU-US task force on ITS cooperation has recently convened a working group for sustainability applications, aiming to research sustainable traffic operational scenarios. One of the key goals is to define the scope of sustainable ITS applications and assess commonalities and differences in message sets, data transmission techniques, and system algorithms. This paper describes a general structure of operational scenarios based on increasing level of complexity with regard to traffic signal timing algorithms and use of communication technologies. Implications for the application use cases of eco-traffic signal timing, eco-traffic signal priority, and eco-approach and departure at signalized intersections are described.

Macro emission module for assessing ITS with macroscopic traffic models
20th ITS World Congress Tokyo 2013, 2013
Author: Klunder, G.
Author: Stelwagen, U.
Author: Woldeab, Z.
This paper presents a macro emission module for macroscopic traffic models to be used for assessment of ITS and traffic management. It especially focuses on emission estimates for different urban intersection types. It provides emission values for CO, CO<inf>2</inf>, HC, NO<inf>x</inf>, and PM10. It is applied and validated in the EU 7th Framework project eCoMove and in a macroscopic traffic model of the Ministry of Infrastructure and the Environment of the Netherlands. In this paper, the development of the module, application in eCoMove and some validation results are presented.

Speed models for energy-efficient maritime transportation: A taxonomy and survey
Transportation Research Part C: Emerging Technologies, volume 26, page 331-351, 2013
https://doi.org/10.1016/j.trc.2012.09.012
Author: Psaraftis, H.N.
Author: Kontovas, C.A.
International shipping accounts for 2.7% of worldwide CO2 emissions, and measures to curb future emissions growth are sought with a high sense of urgency. With the increased quest for greener shipping, reducing the speed of ships has obtained an increased role as one of the measures to be applied toward that end. Already speed has been important for economic reasons, as it is a key determinant of fuel cost, a significant component of the operating cost of ships. Moreover, speed is an important parameter of the overall logistical operation of a shipping company and of the overall supply chain and may directly or indirectly impact fleet size, ship size, cargo inventory costs and shippers' balance sheets. Changes in ship speed may also induce modal shifts, if cargo can choose other modes because they are faster. However, as emissions are directly proportional to fuel consumed, speed is also very much connected with the environmental dimension of shipping. So when shipping markets are in a depressed state and " slow-steaming" is the prevalent practice for economic reasons, an important side benefit is reduced emissions. In fact there are many indications that this practice, very much applied these days, will be the norm in the future. This paper presents a survey of speed models in maritime transportation, that is, models in which speed is one of the decision variables. A taxonomy of such models is also presented, according to a set of parameters. © 2012 Elsevier Ltd.

The concept of energy management in railway systems and development of the EE train traffic control
20th ITS World Congress Tokyo 2013, 2013
Author: Miyoshi, M.
Author: Koike, O.
Author: Takeba, T.
Author: Ohya, J.
Author: Tonosaki, Y.
The railway is generally considered as an energy-saving mode of transportation. Yet, in order to contribute more to the environment, as well as to ensure a stable supply of electric power and prepare for power price hikes, the further reduction of energy consumption and peak load cuts are needed. To do this, a good grasp of the actual operating conditions, and the supervision and control of energy consumption are also important. This paper introduces the Railway Energy Management System (Railway EMS), which aims for the optimal operation of energy by harmonizing with the transportation and energy required for operations while maintaining the service levels. Furthermore, EE (Energy Efficient) Train Traffic Control, a part of the Railway EMS, reduces the energy consumption and cuts peak loads by adjusting the train running speed and timing.

The potential role of vehicle automation in reducing traffic-related energy and emissions
2013 International Conference on Connected Vehicles and Expo, ICCVE 2013 - Proceedings, page 604-605, 2013
https://doi.org/10.1109/ICCVE.2013.6799862
Author: Barth, M.
Author: Boriboonsomsin, K.
Author: Wu, G.
In the last few years, there has been a significant increase of interest related to vehicle automation, even though the fundamental building blocks for automating vehicles have been developed over the last several decades. In parallel, there has been a big push to make vehicles more energy efficient and less polluting, through the development of advanced powertrains, the development and promotion of alternative lower-carbon fuels, better managing vehicle miles traveled, and improving traffic operations. One of the key questions is how can vehicle automation contribute to energy efficiency and reducing emissions. In this paper, we outline some of these potential impacts, examining issues such as vehicle design, vehicle and traffic operations, and even potential changes in activity patterns. © 2013 IEEE.

Optimization of fuel cost and emissions with vehicular networks at traffic intersections
IEEE Conference on Intelligent Transportation Systems, Proceedings, ITSC, page 613-619, 2012
https://doi.org/10.1109/ITSC.2012.6338697
Author: Alsabaan, M.
Author: Naik, K.
Author: Khalifa, T.
Author: Nayak, A.
The volatile world economy has greatly affected fuel prices, while pollution and gas emissions are increasing to negatively impact global warming. Vehicular networks offer a promising approach that can be applied in transportation systems to reduce fuel consumption and emissions. One of the interesting applications involves a traffic light signal sending information to approaching vehicles. Based on that information, the vehicle receiving the message adapts its speed to a speed called the recommended speed (S R), which is the speed that helps the vehicle to reduce fuel consumption and emissions. In this paper, we propose an optimization model with the objective of minimizing fuel consumption and emissions. The speed that can achieve this goal is the optimum SR. We also propose an efficient heuristic expression to compute near-optimal values of the optimum S R. © 2012 IEEE.

Simulation of the impact of traffic lights placement on vehicle's energy consumption and CO2 emissions
IEEE Conference on Intelligent Transportation Systems, Proceedings, ITSC, page 620-625, 2012
https://doi.org/10.1109/ITSC.2012.6338755
Author: Corti, A.
Author: Manzoni, V.
Author: Savaresi, S.M.
This paper proposes a method to estimate the impact of traffic light placement policies in term of vehicles' fuel consumption and CO2 emissions. The method comprises two steps. First, speed profiles are generated representing vehicle's behavior. Then, the mechanical energy spent by the vehicle is computed. The estimation is then used to compare different policies of traffic light placement. Simulations have been carried out to analyze the impact of semaphores distributed into a real road. The relation between the number of traffic lamps and the energy spent is quantified. Finally, a sensitivity analysis is provided considering different classes of vehicles travelling on urban roads. © 2012 IEEE.

Traffic warning system using visible light communication
Quality - Access to Success, volume 13, issue SUPPL.5, page 417-420, 2012
Author: Safriuc, M.
Author: Ciupan, C.
This paper presents an innovative system of communication between vehicles of different information and communication vehicle found in traffic road infrastructure. The system uses the headlight light that transmits data in the visible wavelength of light, and it is further translated by a decoder. TWS system allows multiple communication between vehicles located in the same sight area. This allows a direct exchange of data between them, the drivers benefit of real-time information about road conditions, traffic jams or traffic light system operation. The concept focuses on smart driving that favor the efficient use of energy and increases safety by anticipating what is in front of another vehicle.

Development of an energy efficient train traffic control system for saving electricity
WIT Transactions on the Built Environment, volume 127, page 499-512, 2012
https://doi.org/10.2495/CR120421
Author: Miyoshi, M.
Author: Takeba, T.
Author: Miyatake, M.
Although rail transportation is conventionally considered to be environmentallyfriendly, currently research is being carried out globally to find ways to improve energy-saving in rail transportation. Development of an energy management system for railways and new transport systems including the BRT (Bus Rapid Transit) system has begun. The railway energy management system manages and controls the use of energy for transportation as well as train operation. An EE (energy efficient) train traffic control system is being developed in order to reduce energy consumption in train traffic operation. This system is mainly useful for urban railways. The control system reduces consumed running energy by assigning several seconds of the scheduled margin times at platforms to inter-stations. While taking care about delay of the trains, the control system adjusts the arrival-and-departure time at stations without making passenger aware of the difference from the usual. The following methods can be considered in utilization; 1) drivers judge and lengthen the running time appropriately according to the train operation condition of routes; 2) the ground operation control device grasps train traffic conditions and decides the arrival time at the next station and then orders the time to each train using a ground-vehicle transmission system, while drivers operate according to the guidance by the on-board driving assistance equipment; 3) trains run with automatic train operation equipment according to the order from the ground operation control device. By computer simulation for typical urban transport lines, the evaluation of an EE train traffic control algorithm was carried out. As a result, it was confirmed that a 5% reduction of energy consumed is expected by assigning 5 seconds on average to the margin included in station stoppage time to the running time between stations. © 2012 WIT Press.

A VANET based intelligent road traffic signalling system
Australasian Telecommunication Networks and Applications Conference, ATNAC 2012, 2012
https://doi.org/10.1109/ATNAC.2012.6398066
Author: Nafi, N.S.
Author: Khan, J.Y.
Road Traffic Information System is a key component of the modern intelligent transportation system. Road signaling systems can be made more efficient if real time information from different road sensors and vehicles can be fed in to a wide area controller to optimize the traffic flow, journey time, as well as safety of road users. The VANET architecture provides an excellent framework to develop an advanced road traffic signaling system. In this paper we present a unique VANET based road traffic signaling system that could significantly improve traffic flow, energy efficiency and safety of road users. The VANET based system has been developed using a distributed architecture by incorporating the distributed networking feature. In this paper we first introduce a new Intelligent Road Traffic Signaling System (IRTSS) system based on the VANET architecture. The paper presents some initial simulation results which are obtained by using an OPNET based simulation model. Simulation results show that the proposed architecture can efficiently serve road traffic using the 802.11p based VANET network. © 2012 IEEE.

Advanced multimodal traveller information system for reduced energy and GHG emissions
IET Conference Publications, volume 2012, issue 602 CP, 2012
https://doi.org/10.1049/cp.2012.1543
Author: Kramers, A.
In this paper a systematic investigation of functionality in nine existing multimodal Advanced Traveller Information Systems (ATIS), primarily from Sweden, Germany, the UK, and the US was made in order to identify opportunities to enable the next generation of ATIS to contribute to lower energy usage and GHG emissions. Based on the investigation there is a discussion on possible future functionalities in ATIS that can support the traveller to choose travel modes that could lead to lower energy usage and GHG emissions.

An analysis of energy saving and carbon reduction strategies in the transportation sector in Taiwan
2012 12th International Conference on ITS Telecommunications, ITST 2012, page 316-318, 2012
https://doi.org/10.1109/ITST.2012.6425190
Author: Chueh, T.-H.
Author: Chou, K.-L.
Author: Liu, N.T.-Y.
Author: Tseng, H.-R.
No matter on the point of view of energy consumption or the carbon dioxide emissions, transportation sector has a critical impact on the energy system and sustainable development. Many countries have proposed various strategies for the sustainable development in the transportation system. In general, there are three kinds of strategies for handling the problem of carbon reduction in the transportation system, which are (1) the improvement of energy efficiency, (2) using the clean fuel or the adoption of advanced power system, and (3) the transportation systems management. In this study, we use the energy engineering model (MARKAL model) to explore the impact of carbon reduction strategies and analyze their contribution for the energy saving and carbon reduction in Taiwan. Finally, the advanced technology development, carbon reduction, carbon emission intensity, and energy intensity in transportation sector in Taiwan will be evaluated from 2010 to 2030. © 2012 IEEE.

An online interactive tool for the energy assessment of residential buildings and transportation
Proceedings - 28th International PLEA Conference on Sustainable Architecture + Urban Design: Opportunities, Limits and Needs - Towards an Environmentally Responsible Architecture, PLEA 2012, 2012
Author: Marique, A.-F.
Author: De Meester, T.
Author: Reiter, S.
In the current context of increasing environmental awareness, energy efficiency is presented as a viable approach to the mitigation of climate change. In addition to public policies dealing with energy efficiency, heightening public awareness on the impact of citizens' lifestyles and behaviours is crucial and could quickly lead to significant reductions in the total energy consumption of a territory. This paper presents a new online interactive tool which enables citizens, local authorities and private developers (1) to assess energy consumption in the building and transportation sectors, at the individual and at the neighbourhood scales; (2) to compare them and (3) to find relevant and personalized hints to reduce their energy consumptions. Numerous methods and tools including a typological classification of buildings, thermal dynamic simulations, life-cycle assessments, statistical treatments of national censuses, etc. were used and combined to build the database used in the online interactive tool. This tool makes the main results of a scientific research accessible to a large non-specialized audience which is crucial in the scope of the sustainable development.

Analytical solution to the minimum fuel consumption optimization problem with the existence of a traffic light

ASME 2012 5th Annual Dynamic Systems and Control Conference Joint with the JSME 2012 11th Motion and Vibration Conference, DSCC 2012-MOVIC 2012, volume 1, page 837-846, 2012
https://doi.org/10.1115/DSCC2012-MOVIC2012-8535

Author: Ozatay, E.
Author: Ozguner, U.
Author: Onori, S.
Author: Rizzoni, G.

Today's driving patterns consume significant amount of useless energy, especially, when the fuel consumptions while braking, idling and re-accelerating at each traffic light are considered for millions of vehicles. This makes a high level management of driving profile crucial. In this paper, an analytical solution to the fuel consumption minimization problem with the existence of a single traffic light is investigated. The analytical solution is important for on-line implementation and sharing the information of the estimated fuel consumption of the road ahead with other vehicles. Pontryagin's minimum principle is used to calculate the optimal velocity profile. Prior to the calculations, it is assumed that we have the knowledge of starting and ending points of the trip, the position and the operation sequence of the traffic light. In order to make the problem solvable, a simplified vehicle model is used. Furthermore, Willans approximation is utilized for fuel consumption calculations with addition of certain amount of idle speed fuel cost. The vehicle is forced to operate between a feasible torque and speed range. The optimization problem is simulated for an SUV vehicle first on a level road, then on a level road with the traffic light and finally on a road with grade. The results have shown that in addition to operating the vehicle close to its optimal point, it is possible to avoid the consumption of useless fuel due to the braking, idling and re-acceleration phases of a traffic light.

Comparison of eco and time efficient routing of ICEVs, BEVs and PHEVs in inner city traffic

2012 IEEE Vehicle Power and Propulsion Conference, VPPC 2012, page 1165-1169, 2012
https://doi.org/10.1109/VPPC.2012.6422511

Author: Richter, M.
Author: Zinser, S.
Author: Kabza, H.

Energy efficient driving becomes more and more important today. There are different arrangements to save energy in city traffic. One possibility is to choose eco-routes. For the calculation of eco-routes different factors have to be considered like street topology, route density and also the drive train of the vehicle. In this paper we will show the energy saving potential and the differences of eco routes of ICEV, BEV and PHEV. We will show how it is possible to generate the necessary data like the travel time and the route energy consumption to calculate eco or time efficient routes. We will also show that eco-routing of the different drive trains is possible with very fast genetic algorithms like the ant colony optimization algorithm.

Emission and energy consumption characteristics of interrupted over-saturated flow for urban roads with heterogeneous traffic
Transport Problems, volume 7, issue 3, page 29-40, 2012
Author: Sharma, H.K.
Author: Swami, B.L.
Road transport is a major source of air pollution particularly in towns and cities. In urban areas road traffic accounts for more than half of the emissions of nitrogen oxides, carbon mono-oxide and volatile organic compounds. This paper presents emission and energy consumption characteristics of urban roads with interrupted oversaturated flow comprising of heterogeneous traffic. Model has been developed for heterogeneous traffic under constraints of roadway geometry, vehicle characteristics, driving behaviour and traffic controls and has been calibrated and validated for interrupted oversaturated traffic conditions. Interrupted oversaturated flow conditions prevail in urban areas of most of the developing countries. The model developed shall predict carbon mono-oxide (CO), nitrogen oxides (NOx), volatile organic compounds (VOC), carbon dioxide (CO2) and fuel and energy consumption estimates for urban roads operating under oversaturated conditions of flow. Since model provides improved estimates of speed, delay and congestion it provides better estimates of emissions and energy consumption.

Energy-saving effect of longitudinal control algorithm based on traffic state of electric vehicles
26th Electric Vehicle Symposium 2012, volume 1, page 558-566, 2012
Author: Ogitsu, T.
Author: Omae, M.
Author: Hasejima, N.
This study reports the evaluation of the energy-saving effect of a longitudinal control algorithm based on the traffic states of electric vehicles. For realizing energy saving, the control structure should observe the various traffic states and reduce wasteful acceleration and deceleration. The longitudinal control for energy-saving proposed in this paper is realized using a velocity pattern generation algorithm and a velocity control algorithm. This paper proposes a longitudinal control algorithm to save energy in electric vehicles driven alongside ordinary vehicles on a street and evaluates the energy-saving effect of the control.

Energy-saving effect of longitudinal control algorithm based on traffic state of electric vehicles
26th Electric Vehicle Symposium 2012, EVS 2012, volume 2, page 1023-1031, 2012
Author: Ogitsu, T.
Author: Omae, M.
Author: Hasejima, N.
This study reports the evaluation of the energy-saving effect of a longitudinal control algorithm based on the traffic states of electric vehicles. For realizing energy saving, the control structure should observe the various traffic states and reduce wasteful acceleration and deceleration. The longitudinal control for energy-saving proposed in this paper is realized using a velocity pattern generation algorithm and a velocity control algorithm. This paper proposes a longitudinal control algorithm to save energy in electric vehicles driven alongside ordinary vehicles on a street and evaluates the energy-saving effect of the control.

Integrated vehicle and traffic simulation for emissions and energy efficiency estimation
Proceedings of the 17th International Conference of Hong Kong Society for Transportation Studies, HKSTS 2012: Transportation and Logistics Management, page 359-366, 2012
Author: Tapani, A.
Author: Pereyron, F.
Author: Turnell, M.V.
In this paper, a simulation based method is presented for performance estimation of urban goods delivery vehicles. The method, which consists of an integration of vehicle driveline and dynamics simulation with microscopic traffic simulation, facilitates detailed analysis of vehicles on delivery routes in representative traffic conditions. An application of the method for comparison of conventional diesel driven delivery vehicles and electric delivery vehicles on delivery routes in the city of Lyon is also described. The simulation results indicate benefits of the presented method for applications in which it is of interests to study vehicle performance in representative traffic conditions, e.g. for studies of energy efficiency and emissions.

The issue of saving fuel and energy resources for hauling operations
Transport Means - Proceedings of the International Conference, page 141-144, 2012
Author: Jastremskas, V.
Author: Lingaitis, L.P.
Author: Jevdomacha, G.
The main provisions of the methods used for optimization of station-to-station travel times taken (according to criteria of minimum consumption of fuel and energy resources for haulage), which are used for train timing, are examined. The methods can be applied for cargo, passenger and suburban train service on electrified and non-electrified sections of railway.

Reducing idling at red lights based on probabilistic prediction of traffic signal timings
Proceedings of the American Control Conference, page 6557-6562, 2012
Author: Mahler, G.
Author: Vahidi, A.
A predictive optimal velocity planning algorithm is proposed in this paper that uses traffic Signal Phase And Timing (SPAT) information to increase a vehicle's energy efficiency. Encouraged by positive results based on full SPAT information in [1], [2], this current paper focuses on benefits attainable with partial probabilistic information. Availability of signal phase data is categorized into none, real-time only, and full-future knowledge. Dynamic Programming (DP) with full future knowledge of SPAT provides an energy efficiency maximum. The case with no knowledge of phase or timing represents an uninformed driver, and provides an energy efficiency minimum. In between, a signal phase prediction model which could use historically-averaged timing data and real-time phase data is evaluated, as it represents a technology which is available today. Results from a multi-signal simulation indicate that energy efficiency can be increased with probabilistic timing data and real-time phase data.

Stochastic dynamic programming control policies for fuel efficient in-traffic driving
Proceedings of the American Control Conference, page 3986-3991, 2012
Author: McDonough, K.
Author: Kolmanovsky, I.
Author: Filev, D.
Author: Yanakiev, D.
Author: Szwabowski, S.
Author: Michelini, J.
This paper demonstrates a methodology, based on stochastic dynamic programming, for developing a control policy that prescribes vehicle speed to minimize on average a weighted sum of fuel consumption and travel time, while travelling along the same route or a set of routes in a given geographic area. Given the current road grade, traffic speed and vehicle speed, the control policy prescribes an offset in vehicle speed relative to current traffic speed, which when added to the predicted value of traffic speed, gives a vehicle speed set point for an adaptive cruise control system. It is shown that transition probability matrices necessary to generate the control policy can be constructed from gathered data. A virtual testing environment based on CarSim is used for simulations that can effectively handle vehicle following and adaptive cruise control scenarios. Comparative fuel savings are shown to depend on time of travel (off-peak hours or rush hour) and traffic assumptions.

Energy efficiency practices among road freight hauliers
Energy Policy, volume 50, page 833-842, 2012
https://doi.org/10.1016/j.enpol.2012.08.049
Author: Liimatainen, H.
Author: Stenholm, P.
Author: Tapio, P.
Author: McKinnon, A.
The reduction of greenhouse gases (GHG) is a highly prevalent public policy goal among European Union member countries. In the new White Paper on transport, the role of road freight transports in this is strongly emphasized. This far, however, the efficiency practices utilised in logistics firms are less studied. Drawing from policy goals and new survey data on 295 road transport firms our results show that hauliers are aware of the possible energy efficiency actions but lack the knowledge and resources to fully utilize them. Energy efficiency seems also to be unimportant for many shippers, so there are no incentives for hauliers to improve it. Examples from various countries show that clear energy efficiency improvements can be achieved with active cooperation between hauliers, shippers and policy makers. Such cooperation can be developed in Finland through the sectoral energy efficiency agreements. The novelty and the utility of these results allow scholars to answer important open questions in the national-level determinants of enhancing energy efficiency practices among road freight hauliers, and contribute to our understanding of how these can be fostered in public policies.

Models and control methodologies of heavy haul trains toward energy efficiency: A survey
Proceedings of the 2012 24th Chinese Control and Decision Conference, CCDC 2012, page 2152-2157, 2012
https://doi.org/10.1109/CCDC.2012.6244345
Author: Zhang, L.
Author: Xu, M.
Author: Fan, Y.
Author: Zhuan, X.
The advances in the modeling and control methodologies of heavy haul trains are reviewed from energy efficiency perspective. The developments in railway systems are also reviewed as background of the train modeling and control problem. Until present, there exist two types of models: physical principle model and data-driving model. As far as the control methods are concerned, two different classifications are presented in this paper. One is to classify them into transient control and cruise control according to the focused process. The other is to classify them into switching control and action control according to the framework of the control methods. © 2012 IEEE.

Energy footprint of the city: Effects of urban land use and transportation policies
Journal of Urban Economics, volume 72, issue 2-3, page 147-159, 2012
https://doi.org/10.1016/j.jue.2012.05.001
Author: Larson, W.
Author: Liu, F.
Author: Yezer, A.
Urban land use and transportation policies have dramatic effects on the density and spatial distribution of residences in large cities. Effects of these policies have been analyzed using numerical urban simulation models. At the same time, the US Energy Information Administration's Residential Energy Consumption Survey has allowed researchers to investigate the relation between household energy consumption and characteristics of housing units.This paper links these two lines of inquiry by demonstrating how simulation results on the implications of land use and transportation policies for the spatial form of cities can be used to compute implications for energy consumption. The resulting Urban Energy Footprint Model, " UEFM," allows one to trace the implications of a change in land use zoning or transportation policy through its effects on housing markets and residential location to the resulting changes in energy use for residential and commuting purposes - i.e. to understand the energy footprint of transportation, housing, and land use policies. Accordingly, the UEFM provides, perhaps for the first time, a link between urban and energy economics, and can allow measurement of rebound effects of energy policies in a more general equilibrium context. © 2012 Elsevier Inc.

Estimating the direct rebound effect for on-road freight transportation
Energy Policy, volume 48, page 252-259, 2012
https://doi.org/10.1016/j.enpol.2012.05.018
Author: Winebrake, J.J.
Author: Green, E.H.
Author: Comer, B.
Author: Corbett, J.J.
Author: Froman, S.
Energy and environmental concerns have spawned new policies aimed at reducing emissions and fuel consumption of heavy-duty vehicles (HDVs) worldwide. While such policies intend to reduce HDV energy consumption and emissions, energy savings that reduce transportation costs may lead to increased demand for HDV transportation services. Increased HDV transportation, in turn, can result in increased energy use and emissions-i.e., a direct "rebound effect." This paper provides a critical review of the literature related to the HDV rebound effect. Results of this review demonstrate that the lack of focused studies in this area combined with the variability and heterogeneity of the trucking sector limit general understanding of the HDV rebound effect. Currently, the studies that do exist often create biased or erroneous rebound effect estimates by inappropriately relying on freight elasticities or applying metrics that omit important elements of fuel consumption. Research following a more transparent and coherent approach can improve estimates of the rebound effect from policy measures to improve HDV energy efficiency. © 2012 Elsevier Ltd.

Measuring Sustainability: How Traffic Incident Management through Intelligent Transportation Systems has Greater Energy and Environmental Benefits than Common Construction-Phase Strategies for "Green" Roadways
International Journal of Sustainable Transportation, volume 6, issue 5, page 282-297, 2012
https://doi.org/10.1080/15568318.2011.597910
Author: Tupper, L.L.
Author: Chowdhury, M.A.
Author: Klotz, L.
Author: Fries, R.N.
The research presented in this paper compares the direct emissions and fuel consumption savings of five different strategies for greener roads. Specifically, savings from an incident management strategy using an Intelligent Transportation Systems (ITS) application, traffic cameras, is compared to savings from strategies focused on the construction phase including; using regionally provided materials, reducing fossil fuel use, reusing pavement, and using warm-mix asphalt. The comparison used lifecycle assessment to evaluate a 10-mile segment of a key urban interstate in South Carolina. The results revealed that within the first year of operations, implementing the selected ITS strategy would provide a fuel savings that is over 3 times greater than the combined savings that could be realized by implementing all 4 construction-phase strategies together. For an 8-year repaving schedule, the ITS strategy provides fuel savings over 30 times larger than all the construction phase strategies combined, and reduces carbon-dioxide emissions over 5 times more than any one of the construction-phase strategies. The article highlights ITS's effectiveness as a sustainability tool by comparing emissions and fuel use reductions to sustainable construction strategies. These results suggest that policies and rating systems for more sustainable roads should weigh ITS strategies considerably more than individual construction-phase strategies. The results also highlight the need for transportation policy to evaluate the benefits of all potential sustainable strategies to encourage implementation of the most effective ones. © 2012 Copyright Taylor and Francis Group, LLC.

Home-to-work commuting, urban form and potential energy savings: A local scale approach to regional statistics
Transportation Research Part A: Policy and Practice, volume 46, issue 7, page 1054-1065, 2012
https://doi.org/10.1016/j.tra.2012.04.010
Author: Dujardin, S.
Author: Pirart, F.
Author: Brévers, F.
Author: Marique, A.-F.
Author: Teller, J.
The link between transport energy consumption and land use patterns has been the focus of a considerable amount of academic works over the past decades. While many empirical researches are backed up with solid statistical techniques, most of them do not fully consider the influence of scale underlying empirical quantitative investigations. Using fine-scale home-to-work commuting data for Wallonia (Belgium), this paper re-evaluates Breheny's (1995) assertion that urban structure should hold the characteristics of major cities if substantial energy savings are to be achieved. A local scale approach highlights efficient settlements in terms of transport energy consumption not only within major towns, but also within remote rural areas. Furthermore, results suggest that influencing the urban form following local energy efficient examples rather than regional ones could also yield significant gains, without an extreme policy stance of re-urbanisation in major cities. © 2012 Elsevier Ltd.

Energy efficiency: Lessons from transport
Energy Policy, volume 46, page 1-3, 2012
https://doi.org/10.1016/j.enpol.2012.04.056
Author: Moriarty, P.
Author: Honnery, D.
Many researchers have stressed the apparently great potential for improvements in energy efficiency to dramatically decrease total energy use, but despite steady progress in the technical efficiency gains, global primary energy use continues to rise. For transport, we show how the concept of energy efficiency has been progressively expanded over time, as our ideas on what constitutes transport output useful to individuals has evolved. Even the energy inputs regarded as necessary for transport have undergone revision, because of the need to compare different modes. Finally we discuss the relevance of the changes in our notions of transport efficiency for energy efficiency in general. © 2012 Elsevier Ltd.

We keep on truckin': Trends in freight energy use and carbon emissions in 11 IEA countries
Energy Policy, volume 45, page 327-341, 2012
https://doi.org/10.1016/j.enpol.2012.02.040
Author: Eom, J.
Author: Schipper, L.
Author: Thompson, L.
Based on detailed national and international data on freight transportation, we analyze trends in freight CO 2 emissions in 11 IEA countries from the earliest year of data availability to 2007-2010. The cross-country comparison of the freight transportation sector indicates that per capita CO 2 emissions span a wide range and are mostly determined by local needs without full knowledge or coordination with policies and practices in other countries. Over the last several decades, while many developed countries have experienced decreased coupling between total freight activity (measured in tonne-km) and income, no major indication of decreased coupling between trucking and income was found. Rather, the coupling has been strengthened in many countries due to a continued increase in the share of trucking in total freight activity. The energy intensity of trucking has exhibited very large variation among the countries, and its recent international trends are mixed, providing greater challenges to reduce freight CO 2 emissions. Modal shift toward rail away from truck presents a sizeable opportunity to reduce freight CO 2 emissions, although the potential gain varies widely among the countries. © 2012.

Forward power-train energy management modeling for assessing benefits of integrating predictive traffic data into plug-in-hybrid electric vehicles
Transportation Research Part D: Transport and Environment, volume 17, issue 3, page 201-207, 2012
https://doi.org/10.1016/j.trd.2011.11.001
Author: He, Y.
Author: Rios, J.
Author: Chowdhury, M.
Author: Pisu, P.
Author: Bhavsar, P.
In this paper, a forward power-train plug-in hybrid electric vehicle model with an energy management system and a cycle optimization algorithm is evaluated for energy efficiency. Using wirelessly communicated predictive traffic data for vehicles in a roadway network, as envisioned in intelligent transportation systems, traffic prediction cycles are optimized using a cycle optimization strategy. This resulted in a 56-86% fuel efficiency improvements for conventional vehicles. When combined with the plug-in hybrid electric vehicle power management system, about 115% energy efficiency improvements were achieved. Further improvements in the overall energy efficiency of the network were achieved with increased penetration rates of the intelligent transportation assisted enabled plug-in hybrid electric vehicles. © 2011 Elsevier Ltd.

Assessing the energy and greenhouse gas emissions mitigation effectiveness of potential US modal freight policies

Transportation Research Part A: Policy and Practice, volume 46, issue 3, page 588-601, 2012
https://doi.org/10.1016/j.tra.2011.11.010

Author: Nealer, R.
Author: Matthews, H.S.
Author: Hendrickson, C.

This paper estimates the total embodied energy and emissions modal freight requirements across the supply chain for each of over 400 sectors using Bureau of Transportation Statistics Commodity Flow Survey data and Bureau of Economic Analysis economic input-output tables for 2002. Across all sectors, direct domestic truck and rail transportation are similar in magnitude for embodied freight transportation of goods and services in terms of ton-km. However, the sectors differ significantly in energy consumption, greenhouse gas emissions, and costs per ton-km. Recent pressure to reduce energy consumption and emissions has motivated a search for more efficient freight mode choices. One solution would be to shift freight transportation away from modes that require more energy and emit more (e.g., truck) to modes that consume and emit less (e.g., rail and water).Our results show there are no individual sectors for which targeting changes would significantly decrease the total freight transportation energy and emissions, therefore we have also looked at the prospect of policies encouraging many sectors to shift modes. There are four scenarios analyzed: (1) shifting all truck to rail, shifting top 20% sector mode choice, (2) based on their emissions, (3) based on a multi-attribute analysis, and (4) increasing truck efficiency (e.g., mpg). Increasing truck efficiency by 10% results in similar energy and emissions reductions (approximately 7% for energy and 6% for emissions) as targeting the top 20% of sectors when selected based on emissions, whereas selecting the top 20% based on availability to shift from truck results in slightly less reductions of energy and emissions. Implementing policies to encourage higher efficiency in freight trucks may be a sufficient short term goal while efforts to reduce truck freight transportation through sectoral policies are implemented in the long term. © 2011 Elsevier Ltd.

Assessment of energy efficiency and sustainability scenarios in the transport system

European Transport Research Review, volume 4, issue 1, page 47-56, 2012
https://doi.org/10.1007/s12544-011-0063-4

Author: López, E.
Author: Monzón, A.
Author: Pfaffenbichler, P.C.

Background: Energy Policy is one of the main drivers of Transport Policy. A number of strategies to reduce current energy consumption trends in the transport sector have been designed over the last decades. They include fuel taxes, more efficient technologies and changing travel behavior through demand regulation. But energy market has a high degree of uncertainty and the effectiveness of those policy options should be assessed. Methods: A scenario based assessment methodology has been developed in the frame of the EU project STEPS. It provides an integrated view of Energy efficiency, environment, social and competitiveness impacts of the different strategies. It has been applied at European level and to five specific Regions. Concluding remarks: The results are quite site specific dependent. However they show that regulation measures appear to be more effective than new technology investments. Higher energy prices could produce on their turn a deterioration of competitiveness and a threat for social goals. © 2011 The Author(s).

Changing relationship with the car opens up opportunities for public transport
Public Transport International, volume 61, issue 2, page 12-13, 2012
Author: Borghuis, J.
Jan Borghuis analyzes the trends in the attitudes of young people towards cars as a mode of transportation. He states that the demotorization trend is opening up new markets and an opportunity to realize UITP's PTX2 strategy. Roland Berger's Automotive Landscape 2025 report predicts the phenomenon of declining appeal of cars as a mode of transportation among younger generations as one of the important trends for developed countries. The findings of the report suggest that car ownership will no longer be necessary in major urban areas, leading to increasing demotorization by 2025. Mobility systems will provide cars and other mobility sources on demand. UITP's own development strategy for the urban public transport sector until 2025 is based on the same vision. Collective transport's better energy-efficiency will make it the preferred choice in policy decisions.

Energy, pollutant emissions and other negative externality savings from curbing individual motorized transportation (IMT): A low cost, low technology scenario analysis in Brazilian urban areas
Energies, volume 5, issue 3, page 835-861, 2012
https://doi.org/10.3390/en5030835
Author: Maciel, M.
Author: Rosa, L.
Author: Correa, F.
Author: Maruyama, U.
This article examines the inefficient use of resources in the Brazilian transportation system. The energy use growth and external cost generation in this essential economic sector are considerable, and the trend is towards an increasing problem in the coming years. The continued expansion of Brazilian cities and the increase in demand for mobility is a result of a substantial growth in the number of road transport users, as increased earnings enable lower income groups to acquire and use individual motorized means of transport. The aim of this paper is to estimate the potential gains from reducing individual motorized transport by the year 2020. This investigation concludes that in a conservationist scenario, by prioritizing low cost, low technology public policies-which include operation of Bus Rapid Transit systems, walking and cycling facilities and congestion charges, among others-it should be possible to save over USD 30 billion and USD 26 billion in external transportation and infrastructure costs, respectively, up to 2020. In addition, these public policies can save more than 35 million Tons of Oil Equivalents in energy consumption and avoid almost 4,000 thousand tons of local pollution emissions and 37,500 thousand tons of GHG emissions in the same period. © 2012 by the authors.

Evaluating the impacts of urban corridor traffic signal optimization on vehicle emissions and fuel consumption

Transportation Planning and Technology, volume 35, issue 2, page 145-160, 2012
https://doi.org/10.1080/03081060.2011.651877

Author: Kwak, J.
Author: Park, B.
Author: Lee, J.

This study investigates the impacts of traffic signal timing optimization on vehicular fuel consumption and emissions at an urban corridor. The traffic signal optimization approach proposed integrates a TRANSIMS microscopic traffic simulator, the VT-Micro model (a microscopic emission and fuel consumption estimation model), and a genetic algorithm (GA)-based optimizer. An urban corridor consisting of four signalized intersections in Charlottesville, VA, USA, is used for a case study. The result of the case study is then compared with the best traffic signal timing plan generated by Synchro using the TRANSIMS microscopic traffic simulator. The proposed approach achieves much better performance than that of the best Synchro solution in terms of air quality, energy and mobility measures: 20% less network-wide fuel consumption, 8-20% less vehicle emissions, and nearly 27% less vehicle-hours-traveled (VHT).

Optimisation of train energy-efficient operation for mass rapid transit systems

IET Intelligent Transport Systems, volume 6, issue 1, page 58-66, 2012
https://doi.org/10.1049/iet-its.2010.0144

Author: Ke, B.-R.
Author: Lin, C.-L.
Author: Yang, C.-C.

This study presents a method for optimising train driving strategies of the mass rapid transit systems with the aim to save energy between successive stations. Combinational optimisation techniques are developed to solve the online optimisation problem. To achieve an optimal train driving strategy, train operation modes, including acceleration, cruise and coast modes, in tandem with the speed codes of each section, are determined by the MAX-MIN ant system algorithm. The results of the case study show superior performance in terms of energy consumption in comparison with the previous research. Given that computation time reaches a reasonable level, it becomes legitimate to address online optimisation by using the proposed approach.

VMT, energy consumption, and GHG emissions forecasting for passenger transportation
Transportation Research Part A: Policy and Practice, volume 46, issue 3, page 487-500, 2012
https://doi.org/10.1016/j.tra.2011.11.009
Author: Rentziou, A.
Author: Gkritza, K.
Author: Souleyrette, R.R.
Globalization, greenhouse gas emissions and energy concerns, emerging vehicle technologies, and improved statistical modeling capabilities make the present moment an opportune time to revisit aggregate vehicle miles traveled (VMT), energy consumption, and greenhouse gas (GHG) emissions forecasting for passenger transportation. Using panel data for the 48 continental states during the period 1998-2008, the authors develop simultaneous equation models for predicting VMT on different road functional classes and examine how different technological solutions and changes in fuel prices can affect passenger VMT. Moreover, a random coefficient panel data model is developed to estimate the influence of various factors (such as demographics, socioeconomic variables, fuel tax, and capacity) on the total amount of passenger VMT in the United States. To assess the influence of each significant factor on VMT, elasticities are estimated. Further, the authors investigate the effect of different policies governing fuel tax and population density on future energy consumption and GHG emissions. The presented methodology and estimation results can assist transportation planners and policy-makers in determining future energy and transportation infrastructure investment needs. © 2011 Elsevier Ltd.

A method for evaluating transport energy consumption in suburban areas
Environmental Impact Assessment Review, volume 33, issue 1, page 1-6, 2012
https://doi.org/10.1016/j.eiar.2011.09.001
Author: Marique, A.-F.
Author: Reiter, S.
Urban sprawl is a major issue for sustainable development. It represents a significant contribution to energy consumption of a territory especially due to transportation requirements. However, transport energy consumption is rarely taken into account when the sustainability of suburban structures is studied. In this context, the paper presents a method to estimate transport energy consumption in residential suburban areas. The study aimed, on this basis, at highlighting the most efficient strategies needed to promote awareness and to give practical hints on how to reduce transport energy consumption linked to urban sprawl in existing and future suburban neighborhoods. The method uses data collected by using empirical surveys and GIS. An application of this method is presented concerning the comparison of four suburban districts located in Belgium to demonstrate the advantages of the approach. The influence of several parameters, such as distance to work places and services, use of public transport and performance of the vehicles, are then discussed to allow a range of different development situations to be explored. The results of the case studies highlight that traveled distances, and thus a good mix between activities at the living area scale, are of primordial importance for the energy performance, whereas means of transport used is only of little impact. Improving the performance of the vehicles and favoring home-work give also significant energy savings. The method can be used when planning new areas or retrofitting existing ones, as well as promoting more sustainable lifestyles regarding transport habits. © 2011 Elsevier Inc.

Decoupling of road freight energy use from economic growth in the United Kingdom
Energy Policy, volume 41, page 84-97, 2012
https://doi.org/10.1016/j.enpol.2010.07.007
Author: Sorrell, S.
Author: Lehtonen, M.
Author: Stapleton, L.
Author: Pujol, J.
Author: Champion, T.
Between 1989 and 2004, energy consumption for road freight in the UK is estimated to have increased by only 6.3%. Over the same period, UK GDP increased by 43.3%, implying that the aggregate energy intensity of UK road freight fell by 25.8%. During this period, therefore, the UK achieved relative but not absolute decoupling of road freight energy consumption from GDP. Other measures of road freight activity, such as tonnes lifted, tonnes moved, loaded distance travelled and total distance travelled also increased much slower than GDP. The main factor contributing to the observed decoupling was the declining value of manufactured goods relative to GDP. Reductions in the average payload weight, the amount of empty running and the fuel use per vehicle kilometre also appear to have made a contribution, while other factors have acted to increase aggregate energy intensity. The results demonstrate that the UK has been more successful than most EU countries in decoupling the environmental impacts of road freight transport from GDP. However, this is largely the unintended outcome of various economic trends rather than the deliberate result of policy. © 2010 Elsevier Ltd.

Development and evaluation of an economic-driving assistance program for transit vehicles
Energies, volume 5, issue 2, page 371-385, 2012
https://doi.org/10.3390/en5020371
Author: Ma, W.
Author: Xie, H.
Author: Han, B.
This paper focuses on development and evaluation of an economic-driving assistance program for transit vehicles (EDTV) which can minimize energy consumption, air pollution emission of buses, and improve the level of service of transit system as well. Taking advantage of the latest advances in information and communication technologies, the EDTV system can provide bus drivers with optimal recommended bus holding times at near-side bus stops and dynamic bus speed to adapt to the real-time traffic control plan at downstream intersections. In order to address the impacts of the stochastic variation of bus dwell time, the total link between adjacent intersections is divided into three parts: upstream of bus stop part; bus stop part; and downstream of bus stop part. The methods for calculating recommended parameters, including bus holding time and bus speed in each of the three parts are proposed based on real-time bus status and signal status at downstream intersections. A VISSIM-based simulation platform was designed and used for simulating and evaluating the proposed EDTV system. Extensive experimental analyses have shown that the proposed EDTV system can improve the performance of a transit system in terms of reducing fuel consumption, air pollution emissions and level of service of the transit system. © 2012 by the authors. licensee MDPI, Basel, Switzerland.

Interdependencies between transport fuel demand, efficiency and quality: An application to Austria

Energy Policy, volume 41, page 47-58, 2012
https://doi.org/10.1016/j.enpol.2010.10.015
Author: Goerlich, R.
Author: Wirl, F.
This paper focuses on the interdependencies between technical efficiencies and energy demand which are often either treated in isolation or do not get the sufficient attention in the literature. More precisely, this paper uses technical efficiencies as one crucial determinant of energy demand in order to integrate at least two issues that are usually investigated separately from each other: the rebound effect resulting from improved technical efficiencies and the asymmetry of energy demand. In this regard, our paper sets out a theoretical framework which has the following implications: higher efficiency increases service demand (first order rebound), low fuel prices and higher efficiency increases the demand for quality (second order) which in turn increases service demand further (third order); ceteris paribus, energy price shocks should increase scrapping rates; fuel prices direct the R&D expenditures of car producers; those on engine efficiency are irreversible, which has the consequence that energy price elasticities depend on the history of energy prices rather than being asymmetrical. Derived implications are subsequently tested on Austrian data. In particular, the purchasing decision diesel versus gasoline powered cars allows to refute the myth that consumers apply high implicit rates for discounting the future benefit from efficient cars. © 2010 Elsevier Ltd.

Modelling transport energy demand: A socio-technical approach

Energy Policy, volume 41, page 125-138, 2012
https://doi.org/10.1016/j.enpol.2010.08.020
Author: Anable, J.
Author: Brand, C.
Author: Tran, M.
Author: Eyre, N.
Despite an emerging consensus that societal energy consumption and related emissions are not only influenced by technical efficiency but also by lifestyles and socio-cultural factors, few attempts have been made to operationalise these insights in models of energy demand. This paper addresses that gap by presenting a scenario exercise using an integrated suite of sectoral and whole systems models to explore potential energy pathways in the UK transport sector. Techno-economic driven scenarios are contrasted with one in which social change is strongly influenced by concerns about energy use, the environment and well-being. The 'what if' Lifestyle scenario reveals a future in which distance travelled by car is reduced by 74% by 2050 and final energy demand from transport is halved compared to the reference case. Despite the more rapid uptake of electric vehicles and the larger share of electricity in final energy demand, it shows a future where electricity decarbonisation could be delayed. The paper illustrates the key trade-off between the more aggressive pursuit of purely technological fixes and demand reduction in the transport sector and concludes there are strong arguments for pursuing both demand and supply side solutions in the pursuit of emissions reduction and energy security. © 2010 Elsevier Ltd.

Cooperative traffic signals for energy efficient driving in tramway systems
19th Intelligent Transport Systems World Congress, ITS 2012, page EU-00422, 2012
Author: Gassel, C.
Author: Matschek, T.
Author: Krimmling, J.
Traffic signals have significant impact on traffic conditions at all, but also on energy consumption of approaching vehicles. The Dresden University of Technology is investigating several paths to reduce unnecessary stops at traffic signals. Finally, three energy saving strategies have been examined in depth: (I) Energy savings by traffic signal control, (II) by an onboard Driver Advisory Systems (DAS) and (III) by considering energy consumption in the cost function of traffic signal control and using DAS as well. As a result of research, cooperative traffic signals were developed being controlled by a system considering multi-model needs. Furthermore, the first DAS for energy efficient tramway control was designed, named COSEL. COSEL receives data about green phases from cooperative signals and is already used in tramway operation.

Energy consumption of a traffic flow: A model-based application for estimating the effects of ITS on motorways
19th Intelligent Transport Systems World Congress, ITS 2012, page EU-00653, 2012
Author: Bottero, M.
Author: Chiara, B.D.
Author: Deflorio, F.
Author: Franco, G.
Author: Marinò, R.
Monitoring of traffic flows on road infrastructures is an increasingly common practice: different type of sensors and devices for counting and classifying vehicles have been tested and installed on the European roads in the last years, contributing to the growing of the availability of several databases. On the other hand, methodologies for the assessment, in transport field, of the energy consumption and the consequent emissions require several data sets, that are not always available. Consequently, it is interesting to investigate an innovative approach able to represent the energy dissipation, starting from traffic monitoring, with related parameters. The presence of ITS may, as well-known, influence a traffic flow. Therefore different scenarios based on actual or simulated data allow us to estimate the energy use of a vehicle flow, also when influenced by an ITS application. As concerns the approach presented in this paper, it takes into account both a mechanical model, which provides an easy evaluation of energy consumption, and a traffic microsimulation approach, starting in both cases from the measurement of the classical traffic flow parameters.

Rail transportation energy efficiency-oriented technologies
2012 Joint Rail Conference, JRC 2012, page 787-791, 2012
https://doi.org/10.1115/JRC2012-74130
Author: Alexander, P.E.
Rail transportation is playing a very important role in the effort to keep the world's expanding major cities safe and mobile. Travel by rail can move people and cargo with higher levels of energy efficiency, greater safety, lower cost and greater reliability than any other mode of transportation. On average, trips by train can generate between one third and one fifth of the carbon dioxide (CO2) produced by the equivalent automobile or airplane travel. Environmental awareness plus reduced operating costs are primary considerations in decision making for new transit programs around the globe. Energy consumption is a major part of rail operation costs and has been at the focus of rail systems sustainability initiatives. The majority of energy consumed by metropolitan and urban rail systems is used to move the trains. In recent years, energy saving technologies for rail vehicle power systems have been implemented on many rail systems worldwide. Improving railway energy efficiency results in not only a reduction in energy consumption and cost, but also a reduction in pollution due to power generation. In an effort to promote environmental quality and energy efficiency, energy usage in rail systems is analyzed to identify new technologies, developments, and procedures for increased efficiency. This paper provides an overview of the various strategies and solutions used to increase energy efficiency in rail systems and highlights the key technologies needed for their implementation.

The co-operative traffic light control approach of the eCoMove system
19th Intelligent Transport Systems World Congress, ITS 2012, page EU-00094, 2012
Author: Lüßmann, J.
Author: Vreswijk, J.
Author: Mathias, P.
In the EU FP7 project eCoMove will create an integrated solution for road transport energy efficiency based on co-operative technology. The project's core concept assumes that there is theoretical minimum energy consumption achievable with the "perfect eco-driver" travelling through the "perfectly eco-managed" road network. On infrastructure site traffic light control and its cooperation with the vehicles is a main part of the development within eCoMove. It consists of a strategic management, a network wide traffic light control, a local traffic light control and a component to inform and influence the driver. In this paper we introduce the interaction of these components to achieve a "perfectly eco-managed" road network.

Traffic network simulation environment for the co-operative eCoMove system
19th Intelligent Transport Systems World Congress, ITS 2012, page EU-00188, 2012
Author: Mathias, P.
Author: Lüßmann, J.
Author: Santa, C.
Author: Vreeswijk, J.
Author: Mann, M.
In the EU FP7 project eCoMove will create an integrated solution for road transport energy efficiency based on co-operative technology. The project's core concept assumes that there is theoretical minimum energy consumption achievable with the "perfect eco-driver" travelling through the "perfectly eco-managed" road network. In order to perform a large scale evaluation of the concept a microscopic simulation environment is being implemented that shall model the reality with installed eCoMove applications as realistic as possible. The main requirements for the simulation environment are (1) to integrate the eCoMove applications without any changes from their test site implementation, (2) to be able to influence the behaviour of the vehicles according to real implementation behaviour, and (3) to systematically assess the impact of eCoMove applications. Results will be used to improve the microscopic simulations, which will then be applied for an impact assessment. This allows to identify further reduction potentials as well as to adjust the applications. This paper summarizes the conception of the simulation environment and explains the co-operation with in-vehicle components.

Efficiency-increasing driver assistance at signalized intersections using predictive traffic state estimation
IEEE Conference on Intelligent Transportation Systems, Proceedings, ITSC, page 347-352, 2011
https://doi.org/10.1109/ITSC.2011.6083111
Author: Schuricht, P.
Author: Michler, O.
Author: Bäker, B.
Frequent necessary stops at red traffic signals and related braking and acceleration processes significantly affect the fuel consumption and emission rates of a vehicle. The efficiency-increasing potential (fuel saving potential) of a predictive driver assistance system proposing an intelligent vehicle speed adaption well in advance the intersection is examined by a traffic flow model-based simulation. The considered predictive speed assistance system is based on the transmission of traffic light controller information into the approaching vehicle. Besides information on the traffic light timing chart, provision of accurate information on current traffic conditions between the current position of the vehicle and the stop line are necessary for a majority of driving situations. Here, the use of queue length estimation (QLE) techniques based on commonly installed induction loop sensor systems is described to extend the functional benefit of the driver assistance system. From QLE data, two additional main indicators (distance to virtual stop line and time to cleared intersection) can be derived to calculate a energy-efficient speed profile. For a single vehicle approaching an isolated intersection signalized with a standard timing cycle fuel savings of 8-11% can be found. The benefit of a QLE-included control scheme of the assistance system is demonstrated by simulation. Simulation results show situation-specific fuel saving potential differences of up to 28% compared to a basic system control scheme (only traffic light timing information).

Design of a heterogeneous, energy-aware, stereo-vision based sensing platform for traffic surveillance

2011 Proceedings of the 9th International Workshop on Intelligent Solutions in Embedded Systems, WISES 2011, 2011

Author: Khan, U.A.

Author: Quaritsch, M.

Author: Rinner, B.

The biggest challenges faced by intelligent traffic monitoring systems are mobility, compactness and energy-efficiency. Current traffic monitoring systems are based on fixed installations and thus have no or least portability. Also, they use many sensors (e.g, cameras, induction loops, radar or laser), utilize little or no image processing capabilities, and are difficult to set-up. As images contain a lot of information, the surveillance systems purely based on vision can help avoiding the use of additional sensors, reducing the size of the sensor platform and hence increasing the flexibility and mobility. Since mobile systems often run from batteries, power consumption is a major issue and these systems should be highly energy-efficient. In this paper, we describe the heterogeneous sensor architecture of our mobile traffic surveillance system MobiTrick and its potential dynamic power management. The use of heterogeneous sensors is motivated by utilizing the 3D stereo information from the heterogeneous visual sensors to perform the required operations and thus avoiding the use of other large sensors. © 2011 University of Applied Scien.

Benefits of in-vehicle map-based applications for CO2 reduction and energy efficient road transport

18th World Congress on Intelligent Transport Systems and ITS America Annual Meeting 2011, volume 7, page 5681-5693, 2011

Author: Denaro, R.P.

Author: Blervaque, V.

With the maturing of the automotive navigation market and its wide assortment of online and in-vehicle navigation systems, ranging from mapping and directions web applications, to factory-installed units, to personal navigation devices (PNDs) and applications on smart phones, consumers have become very familiar with route guidance and its advantages in saving time and avoiding aggravation in finding destinations. Many users experience an increased appreciation in finding more efficient routes even in familiar areas where they previously thought they were using the most direct route. Now the development community and consumers are finding dramatic benefits of navigation routes and driving behavior that lead to substantial improvements in fuel economy and related CO2 emissions reduction. This is especially true with the advent of height and slope information in digital map databases which are the key parameters of interest in optimizing fuel economy, as well as real-time traffic information which can lead to reduced travel times and fuel usage. In our desire to clinically predict fuel economy, government authorities employ fair and equitable measures to ensure that consumers have an accurate comparison of emissions and that automotive manufacturer compliance with regulations is determined fairly. Unfortunately, the current testing cycles and methods cannot sense the new digital map-based innovations. The purpose of this paper is to describe these emerging map-based fuel and emissions saving features and to recommend ways to build these features into rating and compliance activities to motivate faster deployment and yield significant ecological benefits in the European Union. © 2011 by the Intelligent Transportation Society of America.

Calculation and prediction of energy consumption for highway transportation
IET Conference Publications, volume 2011, issue 587 CP, page 226-231, 2011
https://doi.org/10.1049/cp.2011.1409
Author: Qiu, F.
Author: Li, W.
Author: Xie, Q.
Author: Zhang, P.
Author: Huo, Y.
This paper carries out experiments for energy efficiency, combined with observation of traffic volume, and proposes calculation model of energy consumption for highway system. Standard transport turnover is used to compute future energy consumption, and, in allusion to structural changes in historical data, pseudo variable algorithm is introduced to forecast transport turnover. The results show that this method can calculate accurately the energy consumption, and pseudo variable algorithm can get better prediction than conventional methods.

Developing a model for long-distance freight emissions and energy consumption
FREIGHTVISION-Sustainable European Freight Transport 2050: Forecast, Vision and Policy Recommendation, page 33-41, 2011
https://doi.org/10.1007/978-3-642-13371-8_3
Author: Mattila, T.
Author: Antikainen, R.
The FORESIGHT process required many quantitative estimates, which were not available for long-distance freight transport. Current emission inventories, impacts of forecasts, and previously published scenarios report usually total transport emissions, without focusing specifically on long-distance freight. Since detailed statistics were unavailable, a quantitative model was developed to estimate the figures from existing data. The model was used to estimate the emissions and energy consumption of future transport systems described in the business-as-usual forecasts and in the backcasts. This chapter describes the model structure and parameterization, with an emphasis on the use of the model to estimate the current status of the freight transport system in 2005.

Energy-efficient freight train operation guide system for diesel locomotives
Proceedings of 2011 IEEE International Conference on Service Operations, Logistics and Informatics, SOLI 2011, page 548-553, 2011
https://doi.org/10.1109/SOLI.2011.5986621
Author: Ding, Y.
Author: Bai, Y.
Author: Zhou, F.-M.
Author: Mao, B.-H.
In view of the limitation of onboard system's capacity, requirement of computing speed and impacts of complicated train movement, an optimized model for energy-efficient train operation is proposed, which suits for diesel locomotives with discrete levels of control on uneven rail. An onboard system for energy-efficient train operation with diesel locomotive is developed in accordance with Chinese railway transportation. By collecting dynamic information of train movement and real-time computing, the system can provide energy-efficient train operation guidance of speed-distance profile and handles-distance profile for locomotive driver. The real-time optimized control schemes can ensure the low cost and quality of train movement (safety, punctuality, and so on). To achieve this, some strategies have been applied into making the operating schemes, such as enhancing speed on steep uphill slope, extending coasting distance on steep downhill tracks, and avoiding unnecessary brake. This system has been verified in practical railroad environment for one year. The result shows that the energy consumption is cut by 5.88%, and the safe and relatively low-cost train operation is realized.

Energy inefficiency of marine transportation
Transportation Research Record, issue 2222, page 72-79, 2011
https://doi.org/10.3141/2222-09
Author: Stewart, R.
Policy makers at all levels of government use reports that analyze transportation data for planning, regulation, modeling, and budgeting. The value of a report's analysis is dependent on proper methodology and accurate data. Concerns about the accuracy of transportation data have been raised. A published analysis that represented the energy efficiency of marine transportation compared with other modes of transportation was assessed. The analysis was based on the best available data supplied by a government agency. The methodology, data, and data collection processes used in the case study and other related reports were examined. Recommendations were made for new maritime data collection processes along with changes in data analysis methodology.

Energy, transport, & the environment: Addressing the sustainable mobility paradigm
Energy, Transport, & the Environment: Addressing the Sustainable Mobility Paradigm, page 1-726, 2012
https://doi.org/10.1007/978-1-4471-2717-8
Author: Inderwildi, O.
Author: King, S.D.
Sustainable mobility is a highly complex problem as it is affected by the interactions between socio-economic, environmental, technological and political issues. Energy, Transport, & the Environment: Addressing the Sustainable Mobility Paradigm brings together leading figures from business, academia and governments to address the challenges and opportunities involved in working towards sustainable mobility. Key thinkers and decision makers approach topics and debates including: energy security and resource scarcity greenhouse gas and pollutant emissions urban planning, transport systems and their management governance and finance of transformation the threats of terrorism and climate change to our transport systems. Introduced by a preface from U.S. Secretary of Energy, Steven Chu and an outline by the editors, Dr Oliver Inderwildi and Sir David King, Energy, Transport, & the Environment is divided into six sections. These sections address and explore the challenges and opportunities for energy supply, road transport, urban mobility, aviation, sea and rail, as well as finance and economics in transport. Possible solutions, ranging from alternative fuels to advanced urban planning and policy levers, will be examined in order to deepen the understanding of currently proposed solutions within the political realities of the dominating economic areas. The result of this detailed investigation is an integrated view of sustainable transport for both people and freight, making Energy, Transport, & the Environment key reading for researchers, decision makers and policy experts across the public and private sectors.

Energy use in the transport sector: Ways to improve efficiency
Handbook of Sustainable Energy, page 314-328, 2011
Author: Button, K.

Establishment of a system to compare energy usage and emissions for all transport modes
3rd International Symposium on Ship Operations, Management and Economics 2011, page 170-177, 2011
Author: Lindstad, H.
Author: Mørkve, O.T.
Author: Psaraftis, H.
This paper describes a methodology for calculating the energy consumption and the emissions for all transport modes (sea, road, rail, aviation) in a consistent and comparable way. And it establish good principles for how the energy used and emissions shall be matched with the actual goods transported, and how to allocate the energy used on repositioning (ballast legs) to the cargo transported.

Transportation efficiency
World Energy Engineering Congress 2011, WEEC 2011, volume 2, page 1628-1633, 2011
Author: Reich, A.A.
The transportation sector consumes 70% of the petroleum that the United States uses for fuel, which leads one to study transportation to identify significant opportunity to save energy. Every one-cent increase in the price of a gallon of gas costs the United States Postal Service $8 million per year for their 200,000 vehicle fleet. To reduce American dependence on fossil fuels, the carbon footprint left by vehicular fleets should be evaluated. This paper reports on the current state of fuel efficiency and fleet efficiency in the United States, including government, municipal and large commercial sectors. It will also discuss opportunities in behavior modification to improve fleet efficiency. Case studies will be presented showing evidence of best practices currently implemented. By studying transportation fleets and educating transportation fleet managers of viable alternatives to improve fleet efficiency, we can save significant amounts of fuel and reduce our carbon footprint. This analysis will demonstrate that transportation efficiency is economically feasible for a wide variety of public and private entities and a benefit to the environment.

Complex motion of shuttle buses in a transportation system reducing energy consumption
Physica A: Statistical Mechanics and its Applications, volume 390, issue 23-24, page 4494-4501, 2011
https://doi.org/10.1016/j.physa.2011.07.016
Author: Nagatani, T.
We study the dynamical behavior and transitions of shuttle buses in a transportation system reducing energy consumption. We present the nonlinear-map model for the dynamics of M buses. The motion of shuttle buses depends on the loading parameter and the number. The dependence of the fixed points on the loading parameter is derived. The dynamical transitions occur at 2(M-1) stages with increasing the value of loading parameter. At the dynamical transition point, the motion of buses changes from a stable (an unstable) state to an unstable (a stable) state. The shuttle buses display periodic motions with various periods in the unstable state. In the unstable state, the number of riding passengers fluctuates complexly with varying trips.

Energy saving obligations and white certificates: Ideas and considerations for the transport sector
International Journal of Sustainable Transportation, volume 5, issue 6, page 345-374, 2011
https://doi.org/10.1080/15568318.2010.545472
Author: Bertoldi, P.
Author: Rezessy, S.
Author: Anable, J.
Author: Jochem, P.
Author: Oikonomou, V.
A lot of policy interest and analysis has been focused on energy saving obligations on energy distributors or suppliers (mainly electricity and gas) coupled with trading of certified energy savings via tradable white certificates. While in the European Union the Energy Services Directive (2006=32=EC) also applies to transport fuels and some of the existing energy saving obligations allow certification of savings from transport projects, as of the end of 2009 no EU Member State has energy saving obligations on transport fuel distributors. The article explores the application of energy saving obligations in road transport, discussing the imposition of energy saving obligations on transport fuel suppliers, the definition of eligible technologies and projects, and considering energy saving obligations as a stand-alone tool or integrated with existing electricity and gas obligations. The article intends to open further discussion and research on the topic. Copyright © Taylor & Francis Group, LLC.

Intermodal traffic, regulatory change and carbon energy conservation in US freight transport
Applied Economics, volume 43, issue 27, page 3945-3963, 2011
https://doi.org/10.1080/00036841003742603
Author: Bitzan, J.D.
Author: Keeler, T.E.
Conserving transport carbon emissions is an important policy goal. Conventional wisdom often holds that conservation is best achieved by increased regulation, and that such gains are best achieved in passenger auto transport (fuel efficiency standards or diversion to transit). We argue that the growth of rail freight has conserved carbon fuel use in the United States, and that fuel-saving changes have been facilitated by reduced regulation since 1980. Methods used include estimation of translog cost functions (and related demand functions for fuel) for intermodal rail and for truck, allowing controlled comparisons of modal fuel use. We find intermodal rail (e.g. trailer on flatcar) to be a powerful conserver: if intermodal rail were eliminated, and traffic transferred to over-thehighway truck, extra annual carbon emissions would be nearly 25 Tg. By comparison, if urban passenger transit were eliminated and replaced by autos (according to one study) the extra annual emissions would be only 3.9 Tg. © 2011 Taylor & Francis.

Study on the maximum operation speeds of metro trains for energy saving as well as transport efficiency improvement
Energy, volume 36, issue 11, page 6577-6582, 2011
https://doi.org/10.1016/j.energy.2011.09.004
Author: Feng, X.
Author: Mao, B.
Author: Feng, X.
Author: Feng, J.
By following a computer-aided simulation procedure, this research analyzes the traction energy cost and transport operation time per 10,000 passenger-kilometers of two representative types of metro trains in China under various top speeds between different stations along a hypothetically straight and smooth metro line, from the perspective of both energy saving and transport efficiency improvement in consideration of multi-factors. It is empirically confirmed that if the transport distance between stops is shorter than 1,800 m, the metro trains should set their maximum speeds lower than 70 km/h but higher than 30 km/h. And a shorter stop-spacing requires a lower maximum speed in this speed range to get the least costs of energy and time. The exact value of the maximum speed in this speed range ought to be further determined based on the integrated performances of the train's passenger capacity, engines, streamline body design, etc. If the transport distance is longer than 1,800 m, the generalized expense of energy and time per 10,000 passenger-kilometers decreases with the increase of the maximum speed of a train. Nevertheless, such decreases become very slow when the maximum speeds of the trains exceed 70 km/h. © 2011 Elsevier Ltd.

Driving and operation strategies for traction-energy saving in mass rapid transit systems
Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit, volume 225, issue 5, page 475-482, 2011
https://doi.org/10.1177/2041301710395077
Author: Malavasi, G.
Author: Palleschi, P.
Author: Ricci, S.
In this article, two models for estimating the energy saving potential on a mass rapid transit system are described.The first model is very useful for analysing the energy and the second one aims at estimating consumptions of a mass rapid transit system in a period of time. The latter was applied first to a generic line with six stations and then to line A of Rome metro network. Results of both applications show that headways of 120-150s are ideal for energy saving as they allow transfers between braking and accelerating trains. © Authors 2011.

Transport intensity and energy efficiency: Analysis of coupling and decoupling polycies implications
2011 4th International Conference on Logistics, LOGISTIQUA'2011, page 305-310, 2011
https://doi.org/10.1109/LOGISTIQUA.2011.5939307
Author: Mraihi, R.
Author: Houarbi, I.
The relationship between economic growth and development of freight transport demand generates generally an increase in energy consumption. Measures are implemented to improve the energy efficiency of freight transport. The purpose of this paper is to evaluate the effectiveness of Tunisian policies proposed through the decomposition technique of the intensity of road freight transport. © 2011 IEEE.

Measurement of energy-saving effect by intermodal freight transport in Thailand
World Review of Intermodal Transportation Research, volume 3, issue 4, page 320-337, 2011
https://doi.org/10.1504/WRITR.2011.041716
Author: Hanaoka, S.
Author: Husnain, T.
Author: Kawasaki, T.
Author: Kunadhamraks, P.
In Thailand, transport sector is the largest energy consuming sector (38%). Road haulage of freight transport accounts for approximately 92% of total domestic freight movements. Accordingly, it is one of the largest contributors to adverse environmental impacts. This study presents one option to reduce energy consumption through modal shift from trailer to intermodal transport involving railway and waterway. It focuses on freight movements between Bangkok and Hat Yai in Thailand. Energy savings are measured by multi-objective optimisation model using decision variables consisting of three mode options: trailer only, intermodal-rail and intermodal-waterway. In addition to energy consumption, the objective function also includes time and charge of shipment factor. © 2011 Inderscience Enterprises Ltd.

Supply chain cost analysis of long-distance transportation of energy wood in Finland
Biomass and Bioenergy, volume 35, issue 8, page 3360-3375, 2011
https://doi.org/10.1016/j.biombioe.2010.11.014
Author: Tahvanainen, T.
Author: Anttila, P.
The increasing use of bioenergy has resulted in a growing demand for long-distance transportation of energy wood. For both biofuels and traditional forest products, the importance of energy efficiency and rail use is growing. A GIS-based model for energy wood supply chains was created and used to simulate the costs for several supply chains in a study area in eastern Finland. Cost curves of ten supply chains for logging residues and full trees based on roadside, terminal and end-facility chipping were analyzed. The average procurement costs from forest to roadside storage were included. Railway transportation was compared to the most commonly used truck transportation options in long-distance transport. The potential for the development of supply chains was analyzed using a sensitivity analysis of 11 modified supply chain scenarios.For distances shorter than 60 km, truck transportation of loose residues and end-facility comminution was the most cost-competitive chain. Over longer distances, roadside chipping with chip truck transportation was the most cost-efficient option. When the transportation distance went from 135 to 165 km, depending on the fuel source, train-based transportation offered the lowest costs. The most cost-competitive alternative for long-distance transport included a combination of roadside chipping, truck transportation to the terminal and train transportation to the plant. Due to the low payload, the energy wood bundle chain with train transportation was not cost-competitive. Reduction of maximum truck weight increased the relative competitiveness of loose residue chains and train-based transportation, while reduction of fuel moisture increased competitiveness, especially of chip trucks. © 2010 Elsevier Ltd.

Research on construction of urban low carbon transport system
ICMREE2011 - Proceedings 2011 International Conference on Materials for Renewable Energy and Environment, volume 2, page 1263-1266, 2011
https://doi.org/10.1109/ICMREE.2011.5930566
Author: Liu, Q.-L.
Author: Chen, W.
Urban transport system is the major consumption of carbon-based fuels, and it is increasingly being highlighted as the sector which contributes least to CO2 emission reduction targets. For the purpose of constructing the energy-saving, environment-friendly and harmonious-developing society, this paper describes a new measure for the analysis of the construction about urban low carbon transport system (ULCTS). The method involves the analysis of utility, low emission vehicles, urban planning, energy, resources, walking and cycling. The model of ULCTS is based on maximization of journey utility and energy conservation. This paper develops the ULCTS which consider the role of transport sector in reducing CO2 emission in Shijiazhuang city. It argues that strategic CO2 emission reduction targets are very ambitious relative to current progress and it need to act more effectively to achieve the target. The result of the present work implied that compared with other methods established based on pure technology, ULCTS can get better quality solutions by reducing fuel cost and emission effects simultaneously.

Design and implementation of intelligent traffic control system based on Mathematica
Applied Mechanics and Materials, volume 58-60, page 2477-2482, 2011
https://doi.org/10.4028/www.scientific.net/AMM.58-60.2477
Author: Xie, N.
Author: Cheng, Q.
Intelligent traffic light control system based on fuzzy control was designed and the implementation of it was also discussed. The system can alter the signal light time according to the number of automobile waiting for passage. The simulation based on Mathematica software show that this method has better effect than traditional way in increase the automobile traffic efficiency and energy saving, what's more it can adapt to complex traffic conditions.

Investigating the impact of track gradients on traction energy efficiency in freight transportation by railway

WIT Transactions on Ecology and the Environment, volume 143, page 461-472, 2011
https://doi.org/10.2495/ESUS110391
Author: Bureika, G.
Author: Vai?iunas, G.
Energy recovery is an effective method of energy saving which can be used for traction in freight transportation by railway. In this area, energy recovery is a process of converting the kinetic energy of a moving train in electricity, which is transferred to another energy consumer (another train using the traction energy) through a catenary. Energy recovery can be effectively used for carrying various raw materials (e.g. timber, oil, etc.) to seaports by railway. The loaded wagons which are much heavier than unloaded wagons carry goods “down” to the seaports, while empty trains return (i.e. go’upward’) to the continent. The seaports are only several meters above the sea level, while the places of freight dispatching can be hundreds of meters, or even kilometres, above the sea level. The asymmetry of freight flows (when the freight flow directed “downwards” is several times heavier than’upward’ freight flow) may be effectively used for energy recovery. The research performed shows that, given an appropriate combination of the asymmetry of the freight flows in opposite directions and particular track gradient, the potential energy of freight trains may be used for freight transportation by applying energy recovery techniques. This allows the authors to make an assumption that this could serve a theoretical basis for making feasible one-way freight transportation by using only the recovered energy of the train. On the other hand, taking into account the rolling resistance of the train, there should be some limiting values of the ratio of the freight flows in the opposite directions, and the track gradient should not have small values (e.g. track gradient or the ratio of freight flows should not be too low). If that is the case, the inertial freight transportation is not possible, and an external energy source sufficient to overcome the rolling resistance of the train is required. Finally, the paper presents the ideas how to effectively use the potentialities of energy recovery technique in freight transportation by railway. © 2011 WIT Press.

The rebound effect on road freight transport: Empirical evidence from Portugal

Energy Policy, volume 39, issue 5, page 2833-2841, 2011
https://doi.org/10.1016/j.enpol.2011.02.056
Author: Matos, F.J.F.
Author: Silva, F.J.F.
Because a large proportion of total operating costs for transportation companies goes towards energy, a reduction in energy operating costs, brought about by an increase in fleet fuel efficiency, or an increase in operational efficiency, results in a change in the relative cost of road freight transportation. This fact could result in an increase in the demand for such services. If this is true, the result would be an increase in total fuel consumption. Consequently, that part of the energy savings obtained through the increased energy efficiency would be lost. The existence of a “Rebound Effect” is especially important in the road freight transportation sector and is crucial for the definition of a national energy policy. In this study, data from the road freight transportation sector in Portugal for the years of 1987 through 2006 was analyzed. It was determined that an increase in energy efficiency did not cause a backfire, but did cause a total direct rebound effect of 24.1%. In addition, fleet operators were more inclined to adopt operational efficiencies than technological fuel efficiencies as a means of increasing the total operational efficiency. © 2011 Elsevier Ltd.

Energy efficiency in transport and mobility from an eco-efficiency viewpoint
Energy, volume 36, issue 4, page 1916-1923, 2011
https://doi.org/10.1016/j.energy.2010.05.002
Author: Usón, A.A.
Author: Capilla, A.V.
Author: Bribián, I.Z.
Author: Scarpellini, S.
Author: Sastresa, E.L.
European Union countries' current energy policies for the transport sector promote, amongst other initiatives; urban mobility plans, the renewal of fleets of cars and industrial vehicles and the introduction of biofuel. From the point of view of eco-efficiency and Life Cycle Assessment (LCA), energy policies must go further. The objective of this paper is to analyse the current transport model and the policies on energy efficiency being promoted in the EU from a LCA point of view. Special attention has been paid to private vehicles, in assessing the environmental impact of the various stages of manufacture, their use and disposal, and the consequences of plans to renew fleets. How old should a vehicle ideally be so that when it is changed, the embodied energy in the materials of the vehicle is less than the gain in energy efficiency due to changing the model for example? In addition the paper analyses the different means of transport in the energy consumption-time ratio from a LCA viewpoint. The fact that reducing transport times leads to greater energy consumption gives rise to the question: how long does nature take to repair the environmental damage caused? © 2010 Elsevier Ltd.

Energy use of integral refrigerated containers in maritime transportation
Energy Policy, volume 39, issue 4, page 1885-1896, 2011
https://doi.org/10.1016/j.enpol.2010.12.015
Author: Fitzgerald, W.B.
Author: Howitt, O.J.A.
Author: Smith, I.J.
Author: Hume, A.
The global trading of perishable goods is possible through the application of product refrigeration and atmospheric control during transportation. A mean energy consumption rate of 2.7kW/TEU was assumed in this study, but was found to have potential variations of around ±60%. New Zealand's maritime trade was considered as a case study for the year 2007 to place the effect of refrigerated transport in context. For individual refrigerated containers, approximately 19% of the energy use related to its journey is used for refrigeration purposes. In 2007, approximately 18% and 61% of New Zealand's imported and exported food products by mass, respectively, required some form of refrigeration during transportation. Maintaining the refrigerated state of imports and exports to and from New Zealand during maritime transportation consumed approximately 280GWh of electricity. Assuming all this electricity was generated onboard vessels using auxiliary engines, approximately 61kt of fuel was consumed and 190kt of CO2 produced. Refrigeration is of particular importance to the many greenhouse gas or carbon footprinting studies conducted around the world. Implications are discussed in the context of greenhouse gas emissions from the transport of apples from NZ to the UK and long-term storage of UK apples. © 2010 Elsevier Ltd.

From traffic breakdown to energy flow analysis
Transportation Research Part C: Emerging Technologies, volume 19, issue 2, page 172-181, 2011
https://doi.org/10.1016/j.trc.2010.05.005
Author: Liebe, C.
Author: Mahnke, R.
Author: Kühne, R.
Usually a traffic breakdown is defined as a speed drop of a certain amount within a dense traffic situation. To describe these dynamics successfully a probabilistic model is chosen where the unpredictable influences are summarized by a stochastic force creating vehicular platoons out of the metastable free flow. In this way the speed drop mentioned above is translated into an overshot of the threshold given by the critical cluster size. The vehicular flow as an open nonequilibrium system of driven or active particles has energy sources like gasoline and energy sinks like road friction. Here we investigate the flux of mechanical energy to evaluate the energy balance out of the given nonlinear dynamical system of vehicular particles. The long-time result, either fixed point or limit cycle depending on traffic density, is characterized by a certain energy value. In order to understand the traffic breakdown as transition from free flow to congested traffic we estimate the total energy per car at low and high densities and observe the energy of jam formation. This picture of energy consumption cannot be prompted by field observations directly. Nevertheless the idea of an energy picture in traffic is quite attractive and pathbreaking. © 2010 Elsevier Ltd.

Backcasting sustainable freight transport systems for Europe in 2050
Energy Policy, volume 39, issue 3, page 1241-1248, 2011
https://doi.org/10.1016/j.enpol.2010.11.051
Author: Mattila, T.
Author: Antikainen, R.
European freight transport emissions and fuel consumption are projected to increase. This study focuses on long distance freight transport (LDFT) and explores possible sustainable futures through quantitative modeling. The evaluation was part of European foresight process between researchers, policy makers and freight companies (FREIGHTVISION). Greenhouse gas (GHG) emissions and energy demand of road, rail and inland waterways were estimated for an EU-27 in 2005. Development was extrapolated to 2050 based on technology and freight performance forecasts. Stakeholders found the forecasted GHG emissions and fossil fuel share unsustainable, so alternative futures were developed with backcasting. The developed emission model was run with random parameter combinations to screen a set of sustainable futures, with an 80% reduction of GHG emissions and fossil fuel share. Freight transport performance was not controlled in the backcasts, but several sustainable futures were found if significant changes in transport efficiency and energy mix are implemented. In spite of agreeing on the importance of reducing emissions, stakeholders had difficulties in choosing a preferred technological future. Simple models were found to be an effective tool for communicating the influence of various measures. Further research is recommended to screen preferable technological roadmaps from the broad range of available futures. © 2010 Elsevier Ltd.

Reducing transport's impact on climate change
Climate Change Adaptation: Ecology, Mitigation and Management, page 87-106, 2011
Author: Moriarty, P.
Author: Honnery, D.
In 2004, transport was responsible for 23 % of global energy-related CO2 emissions, or some 6.3 gigatonnes (Gt) CO2. The 2007 Intergovernmental Panel on Climate Change (IPCC) Report on Mitigation projected a rise of 80 % in CO2 emissions by 2030 in the absence of specific reduction policies. The report estimated that emission reduction policies would only lower the total in 2030 from 11.34 Gt to at best 8.8 Gt. Yet elsewhere the IPCC report showed that to limit global temperature rise since the industrial revolution to 2 °C, thought to represent a prudent limit for avoiding dangerous climatic change, CO2 emissions may have to be cut by the year 2050 to as little as 15 % of the year 2000 values. In this chapter we look at the emission reduction potentials for the various transport modes, both passenger and freight, that could be achieved by the year 2030. The major options for each transport mode include increases in vehicle fuel efficiency and loading, and shifts to non-carbon fuels. We show that these options, even combined, cannot deliver anywhere near the reductions needed. Instead we will need not only massive shifts to more energy-and greenhouse-efficient transport modes, especially for passenger transport, but particularly in the high-income countries, travel reductions as well.

Waste heat recovery in a cruise vessel in the Baltic Sea by using an organic Rankine cycle: A case study
Journal of Engineering for Gas Turbines and Power, volume 138, issue 1, 2016
https://doi.org/10.1115/1.4031145
Author: Ahlgren, F.
Author: Mondejar, M.E.
Author: Genrup, M.
Author: Thern, M.
Maritime transportation is a significant contributor to SO<inf>x</inf>, NO<inf>x</inf>, and particle matter (PM) emissions, and to a lesser extent, of CO<inf>2</inf>. Recently, new regulations are being enforced in special geographical areas to limit the amount of emissions from the ships. This fact, together with the high fuel prices, is driving the marine industry toward the improvement of the energy efficiency of ships. Although more sophisticated and complex engine designs can improve significantly of the energy systems on ships, waste heat recovery arises as the most effective technique for the reduction of the energy consumption. In this sense, it is estimated that around 50% of the total energy from the fuel consumed in a ship is wasted and rejected through liquid and gas streams. The primary heat sources for waste heat recovery are the engine exhaust and coolant. In this work, we present a study on the integration of an organic Rankine cycle (ORC) in an existing ship, for the recovery of the main and auxiliary engines (AE) exhaust heat. Experimental data from the engines on the cruise ship M/S Birka Stockholm were logged during a port-to-port cruise from Stockholm to Mariehamn, over a period of 4 weeks. The ship has four main engines (ME) Wärtsilä 5850 kW for propulsion, and four AE 2760 kW which are used for electrical generation. Six engine load conditions were identified depending on the ship's speed. The speed range from 12 to 14 kn was considered as the design condition for the ORC, as it was present during more than 34% of the time. In this study, the average values of the engines exhaust temperatures and mass flow rates, for each load case, were used as inputs for a model of an ORC. The main parameters of the ORC, including working fluid and turbine configuration, were optimized based on the criteria of maximum net power output and compactness of the installation components. Results from the study showed that an ORC with internal regeneration using benzene as working fluid would yield the greatest average net power output over the operating time. For this situation, the power production of the ORC would represent about 22% of the total electricity consumption on board. These data confirmed

the ORC as a feasible and promising technology for the reduction of fuel consumption and CO<inf>2</inf> emissions of existing ships. © 2016 by ASME.

Full scale wake prediction of an energy saving device by using computational fluid dynamics
Ocean Engineering, volume 101, page 254-263, 2015
https://doi.org/10.1016/j.oceaneng.2015.04.005
Author: Park, S.
Author: Oh, G.
Author: Hyung Rhee, S.
Author: Koo, B.-Y.
Author: Lee, H.
Recently interest on energy saving devices (ESD's) has increased with the enforcement of the energy efficiency design index (EEDI) verification proposed by the International Maritime Organization (IMO). Extension of propulsive performance results from model to full scale ships plays an important role in verification of ships with ESD's. The present study proposed a reliable and efficient propulsive performance prediction method for full scale ships with ESD's. The propulsive performance prediction in full scale KVLCC2 with pre-swirl stator (PSS) was conducted by the proposed method. Its results were then compared with those by the existing extension methods and by full scale CFD computations. From the results, it was confirmed that the proposed method could extend the model scale results to full scale ones with ESD's performance improvement effects. Unlike the existing methods, it takes into account of ESD's and consumes much less computational resources and time than full scale CFD computations. © 2015 Elsevier Ltd.

Shore Side Electricity in Europe: Potential and environmental benefits
Energy Policy, 2015
https://doi.org/10.1016/j.enpol.2015.07.013
Author: Winkel, R.
Author: Weddige, U.
Author: Johnsen, D.
Author: Hoen, V.
Author: Papaefthimiou, S.
In the context of reducing emissions from the transport sector, the EU Commission envisions a strong modal shift to energy efficient modes including maritime shipping and inland shipping, as an alternative for road transport. In view of the expected growth of the sector, the emissions from waterborne transport are a key concern. When at berth, ships typically use their auxiliary engines to generate electrical power for communications, lighting, ventilation and other on-board equipment. The extended use of vessels' auxiliary engines augments greenhouse gas (GHG) emissions and air pollution in the adjacent ports, which are typically located in or near densely populated areas, thus leading to dangerous health and environmental effects. Shore Side Electricity (SSE) is an option for reducing the unwanted environmental impacts of ships at berth, i.e. GHG emissions, other air pollutants (NO<inf>x</inf>, SO<inf>x</inf>, PM) and noise of ships using their auxiliary engines. This paper quantifies the economic and environmental potential for SSE in Europe, through detailed estimation of in-port ships' emissions and relevant energy demand, providing an insight of the expected barriers for implementation and formulating recommendations on policy actions that could accelerate the implementation of SSE in European harbors. © 2015 Elsevier Ltd.

Towards understanding the stepwise dissemination of shipping technologies
WMU Journal of Maritime Affairs, volume 14, issue 1, page 7-24, 2015
https://doi.org/10.1007/s13437-015-0082-4
Author: Psarros, G.A.
Author: Mestl, T.
In the years to come, the maritime industry will have to improve its energy efficiency and soften its environmental footprint to meet higher energy prices and more stringent regulations. Shipowners, managers, and operators are often reluctant in installing new technologies even though they may already have successfully been applied in other industries. By analyzing historical data for the adoption of steel hull and diesel engine technology in the worldwide fleet, we find an indication that dissemination of new technologies happens in a step-like manner. That is, the underlying dynamics does not change continuously but rather abruptly. We argue that this phenomenon could be explained by the fact that any new technology has to function within given structures in a given context; if not, structures will act as barriers. We provide a new explanatory model where the concept of structures is central, i.e., tangible or intangible constructs, usually human made, in the form of infrastructure, regulations, competence, norms, behavior, etc. Constructs can limit (barriers) or support (enablers) a new technology. Once the structures and/or the (new) technology (which itself is a structure) are adapted to each other, they have an enabling effect and thereby change the underlying dynamics in a stepwise way. We support our view by comparing the proposed concept with other published approaches on technology adoption.

Ship impact model for technical assessment and selection of Carbon dioxide Reducing Technologies (CRTs)
Ocean Engineering, volume 97, page 82-89, 2015
https://doi.org/10.1016/j.oceaneng.2014.12.014
Author: Calleya, J.
Author: Pawling, R.
Author: Greig, A.
It is not unreasonable to imagine that the future may herald higher energy prices and greater regulation of shipping's Greenhouse Gas (GHG) emissions. With the introduction of the Energy Efficiency Design Index (EEDI) into MARPOL Annex VI, tools are needed to assist Naval Architects and Marine Engineers to select the best solutions to meet evolving requirements for reduced fuel consumption and associated carbon dioxide emissions. To that end, a concept design tool, the Ship Impact Model (SIM), has been developed for quickly calculating the technical performance of a vessel with one or more Carbon dioxide Reducing Technologies (CRTs) at an early design stage. The underlying basis for this model is the calculation of changes from known 'baseline ships'. The Ship Impact Model has been used in two projects to assess which selection (individual or combination) of Carbon dioxide Reducing Technologies (CRTs) have the most potential, in terms of cost-effectiveness and under other technical, operational and regulatory influences.

A correlation between simulated and real PV system in naval conditions
2014 International Symposium on Fundamentals of Electrical Engineering, ISFEE 2014, 2015
https://doi.org/10.1109/ISFEE.2014.7050571
Author: Cristea, O.
Author: Popescu, M.-O.
Author: Calinciuc, A.S.
In the middle of a continuous and exponential development of renewable energies trend, generated by the increasing price of the conventional fuels which are quickly draining, and facing the fact that we have tremendous messages sent by our polluted Planet, the IMO (International Maritime Organization) returned its face to environment concerns in 2008. During time IMO has realized a series of environment impact studies of maritime domain and, in concordance with this idea, developed IMO's Marine Environment Protection Committee (MEPC). MEPC has given extensive consideration to control of greenhouse gas (GHG) emissions from ships which are implemented in MARPOL Annex VI as a new Chapter 4, entitled 'Regulations on energy efficiency for ships'. We strongly believe that there will be a rapid grow in the number of ships which will have renewable energies systems onboard in the near future. One kind of energy that can be very well applied to the naval domain is the solar energy. As the technologies are developing very fast in the domain of photovoltaics, there is a continuous need of research in order to implement the best technical solutions in naval domain, which, as we know, presents different characteristics from classic terrain applications. Thus, there are some questions that we tried to respond on this article, as: 'what is the difference between efficiency of an onboard installed PV panel and a classic terrain installed PV panel?; how much will affect the albedo of the water?; how much will affect the ships' oscillation moves?; how is comporting a vertical Sun facing PV panel and a non-facing one? To respond at these questions we realized a comparative study between a simulated PV system and its similar real system installed onboard, in order to determine the differences between results and estimate how much we can take in consideration from a simulated PV classic system when we design a real onboard PV system.

A feasibility analysis of waste heat recovery systems for marine applications
Energy, volume 80, page 654-665, 2015
https://doi.org/10.1016/j.energy.2014.12.020
Author: Baldi, F.
Author: Gabrielii, C.
The shipping sector is today facing challenges which require a larger focus on energy efficiency and fuel consumption. In this article, a methodology for performing a feasibility analysis of the installation of a WHR (waste heat recovery) system on a vessel is described and applied to a case study vessel. The method proposes to calculate the amount of energy and exergy available for the WHR systems and to compare it with the propulsion and auxiliary power needs based on available data for ship operational profile. The expected exergy efficiency of the WHR system is used as an independent variable, thus allowing estimating the expected fuel savings when a detailed design of the WHR system is not yet available. The use of the proposed method can guide in the choice of the installation depending on the requirements of the owner in terms of payback time and capital investment. The results of the application of this method to the case study ship suggest that fuel savings of 5%-15% can realistically be expected, depending on the sources of waste heat used and on the expected efficiency of the WHR system.

A study on estimation methodology of GHG emission from vessels by using energy efficiency index and time series monitoring data
Maritime-Port Technology and Development - Proceedings of the International Conference on Maritime and Port Technology and Development, MTEC 2014, page 35-41, 2015
Author: Kano, T.
Author: Namie, S.
The National Maritime Research Institute of Japan (NMRI) has developed an Eco-Shipping Support System for domestic coastal shipping to provide energy saving navigation route and just-in-time speed plan. The operations by these services using weather routing are becoming a popular method combined with the rising fuel price. Accordingly, many simulation-based studies have been accomplished for comparative analysis. However, shipping company attempt to evaluate the effects of these operations based on actual data. The NMRI has developed methodologies to evaluate the amount of GHG emission reductions by using the speed plan services. One is based on Energy Efficiency Navigational Indicator (EENI), which is proposed to evaluate both loaded and unloaded conditions, in different size and speed of ships. The other is the estimate of operational performances of ship by using monitoring data. This paper presents applicability of these estimation methodologies to actual ships. Consequently,effectiveness and practical applicability was confirmed.

An artificial neural network based decision support system for energy efficient ship operations
Computers and Operations Research, 2015
https://doi.org/10.1016/j.cor.2015.04.004
Author: Bal Be?ikçi, E.
Author: Arslan, O.
Author: Turan, O.
Author: Ölçer, A.I.
Reducing fuel consumption of ships against volatile fuel prices and greenhouse gas emissions resulted from international shipping are the challenges that the industry faces today. The potential for fuel savings is possible for new builds, as well as for existing ships through increased energy efficiency measures; technical and operational respectively. The limitations of implementing technical measures increase the potential of operational measures for energy efficient ship operations. Ship owners and operators need to rationalise their energy use and produce energy efficient solutions. Reducing the speed of the ship is the most efficient method in terms of fuel economy and environmental impact. The aim of this paper is twofold: (i) predict ship fuel consumption for various operational conditions through an inexact method, Artificial Neural Network ANN; (ii) develop a decision support system (DSS) employing ANN-based fuel prediction model to be used on-board ships on a real time basis for energy efficient ship operations. The fuel prediction model uses operating data - 'Noon Data' - which provides information on a ship's daily fuel consumption. The parameters considered for fuel prediction are ship speed, revolutions per minute (RPM), mean draft, trim, cargo quantity on board, wind and sea effects, in which output data of ANN is fuel consumption. The performance of the ANN is compared with multiple regression analysis (MR), a widely used surface fitting method, and its superiority is confirmed. The developed DSS is exemplified with two scenarios, and it can be concluded that it has a promising potential to provide strategic approach when ship operators have to make their decisions at an operational level considering both the economic and environmental aspects.

Barriers to energy efficiency in shipping: A triangulated approach to investigate the principal agent problem

Energy Policy, volume 84, page 44-57, 2015
https://doi.org/10.1016/j.enpol.2015.04.019
Author: Rehmatulla, N.
Author: Smith, T.
Energy efficiency is a key policy strategy to meet some of the challenges being faced today and to plan for a sustainable future. Numerous empirical studies in various sectors suggest that there are cost-effective measures that are available but not always implemented due to existence of barriers to energy efficiency. Several cost-effective energy efficient options (technologies for new and existing ships and operations) have also been identified for improving energy efficiency of ships. This paper is one of the first to empirically investigate barriers to energy efficiency in the shipping industry using a novel framework and multidisciplinary methods to gauge implementation of cost-effective measures, perception on barriers and observations of barriers. It draws on findings of a survey conducted of shipping companies, content analysis of shipping contracts and analysis of energy efficiency data. Initial results from these methods suggest the existence of the principal agent problem and other market failures and barriers that have also been suggested in other sectors and industries. Given this finding, policies to improve implementation of energy efficiency in shipping need to be carefully considered to improve their efficacy and avoid unintended consequences. © 2015 The Authors.

EEDI analysis of Ro-Pax and passenger ships in Greece

Maritime Policy and Management, volume 42, issue 4, page 305-316, 2015
https://doi.org/10.1080/03088839.2014.905722
Author: Tzannatos, E.
Author: Stournaras, L.
Within the commitment of the International Maritime Organization to control the impact of shipping on climate change, the development and recent adoption of the Energy efficiency design index (EEDI) as a measure towards curbing CO<inf>2</inf> emissions from shipping mandates that all new ships will have to meet a gradually increased level of energy efficiency, hence ensuring that more efficient newbuildings will replace those withdrawn from service. In this article, the Ro-Pax and passenger ships operating within the domestic shipping network of Greece make a suitable reference for an EEDI analysis because of the significant number of ships deployed, whereas their design diversity provides a test for the reliability of the EEDI approach in this shipping sector. It was found that large-sized Ro-Pax vessels showed a strong negative correlation between EEDI values and gross tonnage, which is consistent with the results of other relevant studies. In a market which is characteristic of diverse vessel designs, it was demonstrated that the “EEDI baseline” calculation is highly influenced by vessel design and operational characteristics, dictating the need for close monitoring of the EEDI effectiveness in this sector. © 2014, © 2014 Taylor & Francis.

Energy and exergy analysis of ship energy systems - The case study of a chemical tanker
International Journal of Thermodynamics, volume 18, issue 2, page 82-93, 2015
https://doi.org/10.5541/ijot.70299
Author: Baldi, F.
Author: Johnson, H.
Author: Gabrielii, C.
Author: Andersson, K.
Shipping contributes today to 2.1% of global anthropogenic greenhouse gas emissions and its share is expected to grow together with global trade in the coming years. At the same time, bunker prices are increasing and companies start to feel the pressure of growing fuel bills in their balance sheet. In order to address both challenges, it is important to improve the understanding of the energy consumption trends on ships through a detailed analysis of their energy systems. In this paper, energy and exergy analysis are applied to the energy system of a chemical tanker, for which both measurements and technic knowledge of ship systems were available. The application of energy analysis to the case-study vessel allowed for the comparison of different energy flows and therefore identifying system components and interactions critical for ship energy consumption. Exergy analysis allowed instead identifying main inefficiencies and evaluating waste flows. Results showed that propulsion is the main contributor to ship energy consumption (70%), but that also auxiliary heat (16.5%) and power (13.5%) needs are relevant sources of energy consumption. The potential for recovering waste heat is relevant, especially from the exhaust gases, as their exergetic value represents 18% of the engine power output.

Increased energy efficiency in short sea shipping through decreased time in port
Transportation Research Part A: Policy and Practice, volume 71, page 167-178, 2015
https://doi.org/10.1016/j.tra.2014.11.008
Author: Johnson, H.
Author: Styhre, L.
According to a range of assessments, there exists a large cost-effective potential to increase energy efficiency in shipping through reduced speed at sea enabled by shorter time in port. This means that the energy needed can be reduced whilst maintaining the same transport service. However, the fact that a large cost-effective potential has been identified that is not being harnessed by decision-makers in practice suggests that there is more to this potential to understand. In this paper, the possibilities for increasing energy efficiency by reducing waiting time in port are explored and problematised through a case study of a short sea bulk shipping company transporting dry bulk goods mainly in the North and Baltic seas. Operational data from two ships in the company's fleet for one year showed that the ships spent more than 40% of their time in ports and that half of the time in port was not productive. The two most important reasons for the large share of unproductive time were that ports were closed on nights and weekends and that ships arrived too early before the stevedores were ready to load or unload the cargo. Reducing all of the unproductive time may be difficult, but the results also show that even a conservative estimate of one to four hours of reduced time per port call would lead to a reduction in energy use of 2-8%. From in-depth interviews with employees of the shipping company, ports and ship agencies, a complex picture is painted when attempting to understand how this potential arises. Aspects such as a lack of effective ship-shore-port communication, little time for ship operators, an absence of means for accurately predicting energy use of voyages as a function of speed, perceived risk of arriving too late, and relationships with third-party technical management may all play a role. © 2014 The Authors.

Influence of the required EEDI reduction factor on the CO<inf>2</inf> emission from bulk carriers
Energy Policy, volume 84, page 107-116, 2015
https://doi.org/10.1016/j.enpol.2015.04.031
Author: An?i?, I.
Author: Šestan, A.
In order to improve energy efficiency for ships International Maritime Organization (IMO) introduced Energy Efficiency Design Index (EEDI). For every new ship the attained EEDI has to be calculated and not higher than the required EEDI which is calculated from the reference line value and appropriate reduction factor. The reference line value represents the world fleet average and is dependent on the ship type and size. The reduction factor represents a reduction for the EEDI relative to the reference line value and is increased in a set of time intervals. However, the scheme of the reduction factor change seems to be rigidly set and could lead to design issues and ship under powering. This study estimates the CO<inf>2</inf> emission from bulk carriers based on the current reduction factor change policy. Other policies and some innovative approaches are also discussed and the CO<inf>2</inf> emission in every scenario is estimated. The results are then compared with the requirement of reaching mean global CO<inf>2</inf> stabilization level of 550ppm in the atmosphere. It is concluded that policies which include feedback from the shipbuilding sector impose requirements that could be much easier to satisfy and which will lead to overall lower CO<inf>2</inf> emission. © 2015 Elsevier Ltd.

Methodologies for estimating shipping emissions and energy consumption: A comparative analysis of current methods
Energy, volume 86, page 603-616, 2015
https://doi.org/10.1016/j.energy.2015.04.083
Author: Moreno-Gutiérrez, J.
Author: Calderay, F.
Author: Saborido, N.
Author: Boile, M.
Author: Rodríguez Valero, R.
Author: Durán-Grados, V.
The debate on the evaluation of maritime emissions offers several different methods of estimating emissions. These methods are not easily compared due to their analysis of different contexts and their underlying different assumptions. The estimates of the International Maritime Organization in confirmed some of the results in the literature, but the debate is ongoing. In this manuscript, factors from nine methods that have been applied for the evaluation of fuel consumption and emissions are studied and compared. The review and application of these maritime emission inventories reveal no significant differences between these methods. Regarding the total pollutant values, the largest differences correspond to the application of the factors employed by the International Maritime Organization for main engines, and the smallest differences correspond to the application of the factors employed by the Environmental International Corporation for auxiliary engines. The recommendations made in this manuscript include the use of the STEAM (ship traffic emission assessment model) method, the use of the method developed by Goldsworthy to apply the emission factors and the consideration of the maintenance state of the engines as an additional uncertainty factor. The analysis made in this manuscript shows more possibly detailed methods that can substantially improve the quality of bottom-up inventory estimates. © 2015 Elsevier Ltd.

Optimized selection of vessel air emission controls-moving beyond cost-efficiency
Maritime Policy and Management, volume 42, issue 4, page 362-376, 2015
https://doi.org/10.1080/03088839.2013.872311
Author: Balland, O.
Author: Girard, C.
Author: Erikstad, S.O.
Author: Fagerholt, K.
Shipping currently has an unexploited potential for improved energy efficiency and reduced emissions to air. Many existing air emission controls have been proved to be cost-efficient but are still not commonly installed on board vessels. This paper discusses the so-called 'energy paradox' in maritime transportation, presenting barriers to overcome and criteria to consider when selecting cost-efficient air emission controls. Current approaches typically select available controls based on their cost-effectiveness. While this is an important aid in the decision-making process, and, in relative terms, easy to quantify, it is not a sufficient criterion to capture the true preferences of the decision-maker. We present in this paper a multi-criteria optimization model for the selection of air emission controls. This decision framework can also incorporate subjective and qualitative factors, and is applied to the shipping company Grieg Shipping. A survey among internal Grieg Shipping stakeholders identifies the important criteria to consider, their relative importance, and the scoring of the controls. This empirical data is used as parameters in the model and the model is then applied on a vessel of the Grieg Shipping fleet. The results show that nonfinancial factors play an important role in the selection of air emission controls in shipping. © 2014, © 2014 Taylor & Francis.

Ship voyage energy efficiency assessment using ship simulators
MARINE 2015 - Computational Methods in Marine Engineering VI, page 591-604, 2015
Author: Bassam, A.M.
Author: Phillips, A.B.
Author: Turnock, S.R.
Author: Wilson, P.A.
The increase in global trade is driving growth in both the size and number of ships. However, this increased demand is leading to greater contributions from shipping to air pollution. This is leading designers and operators to propose and adopt novel powering and propulsion systems. However, there is a challenge with assessing the actual benefit from using a certain retrofit technology or changing the operating conditions of their ships, this may be addressed using numerical simulations. This paper presents a time-domain one-degree of freedom ship simulator implemented in MATLAB/Simulink to enable designers to predict the performance of ship propulsion system during voyages. The proposed simulator is used to assess the effectiveness of three different EEDI and SEEMP measures suggested by IMO to increase ship's propulsion system efficiency which are: voyage execution, slow steaming, and hybrid electric power and propulsion concepts using fuel cells. The developed simulator can be used for further studies and more elements are planned to be added to the ship simulators to make it more generic and capable of testing more propulsion configurations options.

Software components for demand side integration at a container terminal
Computer Science - Research and Development, 2014
https://doi.org/10.1007/s00450-014-0276-6
Author: Ihle, N.
Author: Runge, S.
Author: Meyer-Barlag, C.
Author: Grundmeyer, N.
Author: Appelrath, H.-J.
Local energy management and demand response are established methods to raise energy efficiency, to lower the costs for energy supply, and even to help stabilizing the grid. With the emergence of E-Mobility in industrial enterprises the intelligent use of power demand draws significantly increased importance. Due to the time lag of actual energy usage by the vehicles and the energy demand from the grid for charging the batteries of these vehicles new possibilities for load shifting arise. These can be used to optimize the local energy demand curve, to react to RTP-pricing or to offer services to the grid like providing control reserve power. Support of information technology on consumer side is required to effectively make use of these possibilities. Based on a case study of the maritime container terminal altenwerder located in Hamburg and in reference to the electricity market reference architecture a software application is presented that extends the energy management of a flexible consumer with intelligent functions to control the energy demand. © 2014 Springer-Verlag Berlin Heidelberg

A framework to bridge the energy efficiency gap in shipping
Energy, volume 69, page 603-612, 2014
https://doi.org/10.1016/j.energy.2014.03.056
Author: Jafarzadeh, S.
Author: Utne, I.B.
Environmental concerns, emission regulations, fuel prices, and emission taxes increase the demand to improve energy efficiency in shipping. However, several barriers prevent the adoption of cost-effective energy saving measures. In this article a framework is offered to overcome the barriers encountered in shipping. 12 participants from five ship owners in Norway, two equipment suppliers, and a research institute have provided input to this study. The framework makes the barriers evident to ship owners and (energy) managers. It helps them to prioritize and overcome the critical barriers to improve energy efficiency in a consistent manner. Researchers and policy makers can also utilize the framework as it makes challenges to energy efficiency apparent. Finally, due to its generic structure it can be applied to industries other than shipping. © 2014 Elsevier Ltd.

Ecological footprint analysis based awareness creation for energy efficiency and climate change mitigation measures enhancing the environmental management system of Limassol port
Journal of Cleaner Production, 2015
https://doi.org/10.1016/j.jclepro.2015.07.087
Author: Erdas, C.
Author: Fokaides, P.A.
Author: Charalambous, C.
Sea ports are very complex systems related to a wide variety of issues, the most important being waste production as well as water, air and soil releases. Furthermore, in port areas, several activities are carried out that may cause significant environmental impacts such as fisheries, industrial activities and storage of hazardous materials. Setting objectives and goals in terms of a comprehensive environmental management plan is of a great importance for sea ports. The main scope of this study is to introduce a novel approach to rationalize the environmental management strategies of sea ports based on the reduction of their ecological footprint. The object of the study is the Limassol sea port, a main cargo and cruise home port of the Mediterranean that serves one of the largest shipping fleets worldwide. In terms of this study, the most significant environmental aspects of the Limassol sea port are identified. An analysis of the main results of the calculation of the ecological footprint and carbon footprint is presented, by applying the Ecological Footprint analysis methodology. This study aims to deliver a comprehensive methodology that links the results of ecological footprint analysis with the environmental objectives of an ISO 14000 environmental management system. © 2015 Elsevier Ltd.

Barriers to improving energy efficiency in short sea shipping: An action research case study
Journal of Cleaner Production, volume 66, page 317-327, 2014
https://doi.org/10.1016/j.jclepro.2013.10.046
Author: Johnson, H.
Author: Johansson, M.
Author: Andersson, K.
Increased energy efficiency will be paramount in mitigating CO2 emissions from shipping. Paradoxically, previous research has shown that a substantial amount of measures that typically increase energy efficiency, should be cost-efficient to implement. This is often explained in literature in terms of barriers in markets, institutions and organizations. This article is the first of a series of articles from a joint industry project aiming at understanding good energy management practices in shipping companies. It explores barriers to energy efficiency in shipping through a case study of a short sea shipping company in their process to implement an energy management system. An action research design was chosen to contribute to better practice as well as knowledge in the research community. The study shows that work with energy efficiency was not straightforward, and several challenge areas could be discerned: project management capabilities, ship-shore communication, division of responsibilities, access to performance measurements, and competence in energy efficiency. It is proposed that interpretative research methodologies such as action research could contribute to new perspectives on the traditional barrier discourse.

A study on the eco-shipping support System for keeping regularity of ship's schedule
Developments in Maritime Transportation and Exploitation of Sea Resources - Proceedings of IMAM 2013, 15th International Congress of the International Maritime Association of the Mediterranean, volume 2, page 667-674, 2014
Author: Kano, T.
Author: Seta, T.
To minimize the risk of delays, the Eco-Shipping Support System developed in this study is based on forecasts of wind, waves, and current, and unique, high-accuracy methods of estimating the propulsive performance of the vessel in an actual sea. This provides a quantitative understanding of the effects of weather and sea conditions on the propulsive performance of the vessel, and in conjunction with mathematical processing, an optimum voyage plan is proposed, onto which the route, vessel speed plan, and information on weather and sea conditions is then superimposed electronically using on-board electronic chart to provide the crew with a visual and easily understood system. The present study is also conducted to implement investigation of Monitoring, Report and Verification (MRV) methodology of Greenhouse Gas (GHG) emission reduction effect for the optimum voyage plan. MRV methodology is referred circular the Marine Environment Protection Committee (MEPC) of International Maritime Organization and Modified Energy Efficiency Indicator.

Ship trim optimization: Assessment of influence of trim on resistance of moeri container ship
The Scientific World Journal, volume 2014, 2014
https://doi.org/10.1155/2014/603695
Author: Sherbaz, S.
Author: Duan, W.
Environmental issues and rising fuel prices necessitate better energy efficiency in all sectors. Shipping industry is a stakeholder in environmental issues. Shipping industry is responsible for approximately 3% of global CO 2 emissions, 14-15% of global NOX emissions, and 16% of global SOX emissions. Ship trim optimization has gained enormous momentum in recent years being an effective operational measure for better energy efficiency to reduce emissions. Ship trim optimization analysis has traditionally been done through tow-tank testing for a specific hullform. Computational techniques are increasingly popular in ship hydrodynamics applications. The purpose of this study is to present MOERI container ship (KCS) hull trim optimization by employing computational methods. KCS hull total resistances and trim and sinkage computed values, in even keel condition, are compared with experimental values and found in reasonable agreement. The agreement validates that mesh, boundary conditions, and solution techniques are correct. The same mesh, boundary conditions, and solution techniques are used to obtain resistance values in different trim conditions at Fn = 0.2274. Based on attained results, optimum trim is suggested. This research serves as foundation for employing computational techniques for ship trim optimization.

The effects of slow steaming on the environmental performance in liner shipping
Maritime Policy and Management, volume 41, issue 2, page 176-191, 2014
https://doi.org/10.1080/03088839.2013.819131
Author: Woo, J.-K.
Author: Moon, D.S.-H.
The environment issue is one of the significant challenges that the liner shipping industry has to face. The International Maritime Organization (IMO) has set a goal to reduce greenhouse gas (GHG) emissions from existing vessels by 20-50% by 2050 and develop the Energy Efficiency Operational Indicator (EEOI) as a measure for energy efficiency. To achieve this goal, IMO has suggested three basic approaches: the enlargement of vessel size, the reduction of voyage speed, and the application of new technologies. In recent times, liners have adopted slow steaming and decelerated the voyage speed to 15-18 knots on major routes. This is because slow steaming is helpful in reducing operating costs and GHG emissions. However, it also creates negative effects that influence the operating costs and the amount of GHG emissions at the same time.This study started with the basic question: Is it true that as voyage speed reduces, the operating costs and CO2 emissions can be reduced at the same time? If this is true, liners will definitely decelerate their voyage speed themselves as much as possible so that they can increase their profits and improve the level of environmental performance. However, if this is not true, then liners will concentrate just on increasing their profits by not considering environmental factors. This led the authors to set out three objectives: (1) to analyze the relationship between voyage speed and the amount of CO2 emissions and to estimate the changes by slow steaming in liner shipping; (2) to analyze the relationship between voyage speed and the operating costs on a loop; and (3) to find the optimal voyage speed as a solution to maximize the reduction of CO2 emissions at the lowest operating cost, thus satisfying the reduction target of IMO.

Energy review on a maritime energy transfer system for comercial use
Advanced Materials Research, volume 837, page 763-768, 2014
https://doi.org/10.4028/www.scientific.net/AMR.837.763
Author: Preda, A.
Author: Scupi, A.A.
Despite the low energy and lower maintenance benefits of marine heat pump systems, little work has been undertaken in detailed analysis and simulation of such systems. This heat pump system is very attracting, increasing research interests, since the system can be powered by thermal energy that can be provided by a renewable source: the difference of temperature between the ocean water layers. This paper focuses on the annual energy consumption and COP (performance coefficent) of a marine heat pump system implemented for comercial use. This unconventional maritime systems of energy transfer would solve some of the pollution problems that arise from the use of conventional fuels. By using this system we can make a big energy savings in heating our homes and preparation of hot water for domestic use. This energy consumption takes into account the heating and cooling needs of structure along different periods of time, such as winter and summer. Moreover, for each year period, we compared the heat pump efficiency simulated for our cost line with other tree tipes of heat pumps that are using diffrents primary agents. To highlight the performance of heat pump used for this study we coupled it with solar panels. The simulation, performed with TRNSYS (Transient Systems Simulation Program), was made for different working conditions simulating real conditions and temperature variations that occur in a year in the Black Sea coastal area. This experiment is intended to emphasize that marine energy potential that we have and also the advantages of using unconventional energy beside the use of classic fuels. This unconventional system of thermal energy conversion can be applied to both residential and commercial areas bringing an important benefit both the people and the environment.

A general-purpose process modelling framework for marine energy systems
Energy Conversion and Management, volume 86, page 325-339, 2014
https://doi.org/10.1016/j.enconman.2014.04.046
Author: Dimopoulos, G.G.
Author: Georgopoulou, C.A.
Author: Stefanatos, I.C.
Author: Zymaris, A.S.
Author: Kakalis, N.M.P.
High fuel prices, environmental regulations and current shipping market conditions impose ships to operate in a more efficient and greener way. These drivers lead to the introduction of new technologies, fuels, and operations, increasing the complexity of modern ship energy systems. As a means to manage this complexity, in this paper we present the introduction of systems engineering methodologies in marine engineering via the development of a general-purpose process modelling framework for ships named as DNV COSSMOS. Shifting the focus from components - the standard approach in shipping- to systems, widens the space for optimal design and operation solutions. The associated computer implementation of COSSMOS is a platform that models, simulates and optimises integrated marine energy systems with respect to energy efficiency, emissions, safety/reliability and costs, under both steady-state and dynamic conditions. DNV COSSMOS can be used in assessment and optimisation of design and operation problems in existing vessels, new builds as well as new technologies. The main features and our modelling approach are presented and key capabilities are illustrated via two studies on the thermo-economic design and operation optimisation of a combined cycle system for large bulk carriers, and the transient operation simulation of an electric marine propulsion system.

A practical method for predicting the propulsive performance of energy efficient ship with wave devouring hydrofoils at actual seas
Proceedings of the Institution of Mechanical Engineers Part M: Journal of Engineering for the Maritime Environment, volume 228, issue 4, page 348-361, 2014
https://doi.org/10.1177/1475090213489674
Author: Feng, P.
Author: Ma, N.
Author: Gu, X.
The Energy Efficiency Design Index (EEDI) is made mandatory by the International Maritime Organization to reduce emissions of greenhouse gases from international shipping. In this study, wave energy recovery using a pair of hydrofoils fixed at the ship bow to realize energy efficient propulsion is proposed. This so-called wave devouring hydrofoil (WDH) functions both as an anti-motion fin and a wave energy device, which can help reduce the ship wave added resistance, heave and pitch responses. To evaluate its performance, the coupled interaction between the hydrofoils and the ship under head sea condition is first modeled in the frequency domain together with the evaluation of wave added resistance in the presence of the WDHs. Model test is then conducted using a sample containership. Both the beneficial effect of the WDHs and the validity of the numerical model are proved. The peak response is reduced by 80%, 30% and 25% for added resistance, heave and pitch, respectively. This model is then further modified to include other wave directions. Based on frequency domain results, short-term and long term predictions of speed loss, engine power increase and propeller racing are performed for a 3100TEU containership along her transportation route. The merit of this prediction model is that the hull-propeller-engine interactions is considered from a system balance point of view. It is demonstrated that the WDHs can contribute to the energy-efficient ship propulsion at actual seas, achieving a slight reduction of EEDI and ensuring less speed loss and propeller racing.

Active method to manage the use of fuel oil onboard of ships
15th Annual General Assembly International Association of Maritime Universities, IAMU AGA 2014 - Looking Ahead: Innovation in Maritime Education, Training and Research, page 455-464, 2014
Author: Van Uy, D.
Author: Van Tuan, N.
The fuel consumption in maritime transportation is a big fuel consumer. However, to use and to manage the fuel in maritime transportation field is still not proper to actual expect in many countries including Vietnam. The present fuel management on board ships is only based on the set fuel use norm of a country, but not on the actual operating conditions of ships. Therefore, such management method of fuel is not matched to the target of using efficiently and saving energy, but also creates good conditions for crewmember to pilfer the fuel for private profits. So, in order to overcome the situation, we propose a new method to manage the use of fuel on board a ship. This method is based on “online information” about the actual operating parameters of a ship including the main engine and sea conditions, then a suitable plan of ship operation with optimum fuel consumption will be set and sent to a ship for realization. This method is named as an “active method to manage the use of fuel oil onboard of ships”.

Adapting smart grid, RES penetration, electromagnetic compatibility and energy efficiency concepts to electric ship power systems
Materials Science Forum, volume 792, page 328-333, 2014
https://doi.org/10.4028/www.scientific.net/MSF.792.328
Author: Moschakis, M.
Author: Kanellos, F.
Author: Prousalidis, J.
This paper deals with the adaption of Smart Grid, RES penetration, Electromagnetic Compatibility and Energy Efficiency concepts from land to ship power systems. It presents a review on the state-of-art on those areas as regards the land power systems and attempts to propose some of those advances and how they can be adapted to ship power systems. Ship power systems have many resemblances mainly with autonomous land power systems. Thus, autonomous power systems will be used as a model for an accurate and successive adaption of those concepts.

Assessment of profit, cost, and emissions for slender bulk vessel designs
Transportation Research Part D: Transport and Environment, volume 29, page 32-39, 2014
https://doi.org/10.1016/j.trd.2014.04.001
Author: Lindstad, H.
Author: Sandaas, I.
Author: Steen, S.
This paper assesses profit, cost and emissions for slender bulk vessel designs. Traditionally bulk vessels have been designed to maximize cargo carrying ability at the lowest building cost and not on reducing energy consumption. The outcome has been shoebox shaped vessels with short bow sections and hence rather poor hydrodynamic performance even at calm sea and even worse in rough sea. High fuel costs and the mandatory energy efficiency design index, as well as increased environmental concerns have challenged this practice. The present paper provides an assessment of alternative bulk vessel with focus on hull slenderness, expressed by the length block coefficient for alternative fuel price and freight rate scenarios. Our results indicate that slender designs reduce emissions and increases the profit compared to the traditional full bodied designs.

Clean shipping is a crew achievement
Maritime by Holland, volume 63, issue 5, page 26-28, 2014
Author: Buitelaar, H.
Aware of the focus on technology as a driver for sustainable shipping, head technical department and fleet manager Erik Zwijghuizen of MF Shipping shares what he thinks is the main factor for energy efficient steaming. A bigger step is getting the crew to actively monitor the energy demand and to see if this can be produced by engaging only one generator. In their role as ship management company, MF Shipping is not the owner of the vessels they operate. Yet, having the overview of daily operations aboard, they come up with well- documented proposals towards ship owners to make investments that may improve ship efficiency and thereby cut cost and gain profit. Currently, the company has 57 vessels for which they manage crew, maintenance and bookkeeping. 32 of these vessels are under full management, meaning all logistics are done at MF Shipping. Some owners are shipping companies like Erik Thun AB and Thun Tankers, Ahimark or Silverburn Shipping, while also owner-captains trust MF Shipping with planning and crew logistics.

Energy analysis of ship energy systems - The case of a chemical tanker
Energy Procedia, volume 61, page 1732-1735, 2014
https://doi.org/10.1016/j.egypro.2014.12.200
Author: Baldi, F.
Author: Johnson, H.
Author: Gabrielii, C.
Author: Andersson, K.
Improved understanding of ship energy use can be a crucial part of the process of increasing ship energy efficiency. In this paper, the methodology of energy analysis is applied to ship energy systems in order to showcase the benefits of such methodology. Data from one year of operations of a case study ship were used, together with mechanistic knowledge of ship systems, in order to evaluate the different energy flows. The identification of main producers, consumers and waste flows, allowed by the application of the method, leads to the suggestion of a number of possible improvements guided by the improved knowledge of the ship's energy system. © 2014 Published by Elsevier Ltd.

Energy efficiency and time charter rates: Energy efficiency savings recovered by ship owners in the Panamax market
Transportation Research Part A: Policy and Practice, volume 66, issue 1, page 173-184, 2014
https://doi.org/10.1016/j.tra.2014.05.004
Author: Agnolucci, P.
Author: Smith, T.
Author: Rehmatulla, N.
This paper presents the first analysis on how financial savings arising from energy efficient ships are allocated between owners and those hiring the ships. This as an important undertaking as allocation of financial savings is expected to have an impact on the incentives faced by ship owners to invest in more energy efficient vessels. We focus on the dry bulk Panamax segment as it contributes to around 50Mt (5%) of total CO2 emissions from shipping in 2007 and therefore its importance in terms of environmental impact should not be neglected. The time charter market represents a classical example of the principal-agent problem similar to the tenant-landlord problem in the buildings sector. We discovered that on average only 40% of the financial savings delivered by energy efficiency accrue to ship owner for the period 2008-2012. The finding that only part of the savings are recouped by shipowners affecting their incentives towards energy efficiency could consequently have implications on the type of emission reduction policies opted at both, global and regional levels. © 2014 The Authors.

Energy efficiency management system application & measured data analysis on container ship
RINA, Royal Institution of Naval Architects - Design and Operation of Container Ships, Papers, page 73-82, 2014
Author: Yun, K.
Author: Kim, J.
Author: Lee, Y.
Author: Kim, Y.
Author: Park, G.
Author: Bae, H.
Author: Kim, D.
Recent global recession has been prolonged as positioning ship owners to unfavourable business environment for several years. Most of shipping companies are currently trying to ascertain their energy efficiency levels and to find energy saving opportunities to survive in this hard time. For this reason, the ship energy management system is considered as a monitoring and evaluation tool for the cost reduction simultaneously satisfying SEEMP regulation. However, the accurate vessel performance evaluation is very difficult in actual seagoing conditions in reality. Vessel efficiency changes up to 30% depending on the weather condition, ship motion, engine status, etc. In this paper, more comprehensive vessel operational optimization and performance evaluation are executed for container vessel. The container vessel is equipped with trim, route, speed optimization tools with state-of-art technologies. In addition, main equipment performance is evaluated, and weather & non weather effects are analyzed based on ISO correction method. The reasonable accuracy of vessel performance prediction is verified for the voyage from Busan in South Korea to Prince Rupert in Canada. Finally, energy saving potentials are discussed for each optimization techniques.

Long-term potential to reduce emissions from international shipping by adoption of best energy-efficiency practices
Transportation Research Record, volume 2426, page 1-10, 2014
https://doi.org/10.3141/2426-01
Author: Wang, H.
Author: Lutsey, N.
Maritime shipping is highly fuel-efficient, but its sheer volume and rapid growth make it a major source of carbon emissions. Industry and governments seek to reduce the energy use and carbon footprint of shipping. Yet the reasons for the variation in shipping efficiency observed in the world fleet's embrace of best technical and operational practices to increase efficiency remain unexplained. The research reported in this paper offers a novel analysis that connected 2011 in-use fleet characteristics, first-ever global satellite data on ship movement, and technical literature on ship efficiency technology to assess the long-term prospects of increased shipping efficiency. This study also investigated how each ship characteristic influenced the efficiency of the shipping fleet. A ship stock turnover model was developed to track technical and operational efficiency practices in ships independently. The findings indicated that industry-leading ships were about twice as efficient as industry laggards across major ship types. If the available technical and in-use practices of the low-carbon industry leaders of today were fully embraced, the potential would exist to reduce carbon dioxide in absolute terms by more than 300 million metric tonnes by 2040, even while business-as-usual freight movement doubled. On the basis of the data in this assessment, the potential exists to develop a tool for shippers to quantify, evaluate, and compare their supply chain carbon footprints in a manner that does not rely on more aggregated fleet-average simplifications. The methodology, data, and findings of this study should benefit industry as it looks for ways to reduce energy consumption; researchers, who are examining ship operation; and policy makers, who want to curb the climate impact of international shipping.

Low-carbon ship technology based on ship energy efficiency rules
Applied Mechanics and Materials, volume 651-653, page 1349-1356, 2014
https://doi.org/10.4028/www.scientific.net/AMM.651-653.1349
Author: Cui, X.D.
Author: Liu, B.
Author: Wang, L.C.
IMO has discussed and adopted the new Chapter 4 of MARPOL Annex VI, which is an amendment on the ship energy efficiency rules. It limits CO<inf>2</inf> emissions from ships by technical, operational and market-based measures. It will have a profound impact on the shipbuilding industry and shipping enterprises. By participating in the negotiations and striking for growth, the Chinese government authorities have provided funding, policy and technical support for the Chinese shipbuilding industry and shipping enterprises. It is the inevitable choice for China to develop the core technology and innovation capability in low-carbon ships with reference to foreign technical experience and achieve substantial results. © (2014) Trans Tech Publications, Switzerland.

Numerical analysis of turbulent flow around energy saving pre-swirl stator for full and model scale ships
11th World Congress on Computational Mechanics, WCCM 2014, 5th European Conference on Computational Mechanics, ECCM 2014 and 6th European Conference on Computational Fluid Dynamics, ECFD 2014, page 6370-6382, 2014
Author: Park, S.
Author: Oh, G.
Author: Rhee, S.H.
Author: Koo, B.-Y.
Author: Lee, H.
Recently interest on energy saving devices (ESD's) has increased with the enforcement of the energy efficiency design index (EEDI) verification proposed by the international maritime organization (IMO). Extension of propulsive performance results from model to full scale ships plays an important role in verification of ships with ESD's. The present study proposed a reliable and efficient propulsive performance prediction method for full scale ships with ESD's. The propulsive performance prediction in full scale KVLCC2 with pre-swirl stator (PSS) was conducted by the proposed method. Its results were then compared with those by the existing extension methods and by full scale CFD computations. From the results, it was confirmed that the proposed method could extend the model scale results to full scale ones with ESD's performance improvement effects. Unlike the existing methods, it takes into account of ESD's and consumes much less computational resources and time than full scale CFD computations.

Numerical multi-scale analysis of turbulent flow around low-speed ship with energy saving pre-swirl stator
Proceedings of the International Offshore and Polar Engineering Conference, page 961-966, 2014
Author: Park, S.
Author: Oh, G.
To control CO2 emissions from ships, the international maritime organization (IMO) developed the energy efficiency design index (EEDI). To attain required EEDI, studies on energy saving devices (ESDs) have been carried out by many researchers recently. In this paper, KVLCC2 with energy saving pre-swirl stator (PSS) was selected to study the influence of ESDs. The PSS changed rotational flow, which was of help to the propeller thrust. However, it was presumed that the PSS gave a bad effect on the propeller blade cavitation and hull vibration due to pressure fluctuation on the propeller blade. Copyright © 2014 by the International Society of Offshore and Polar Engineers (ISOPE).

Research on influence of energy consumption of shipbuilding on energy efficiency operational indicator

WIT Transactions on Engineering Sciences, volume 84 VOLUME 1, page 485-491, 2014
https://doi.org/10.2495/MEEE20130661

Author: Yang, B.
Author: Sun, P.
Author: Huang, L.
Author: Liu, Y.

In order to reduce carbon dioxide emissions, the Marine Environment Protection Committee (MEPC) of the International Maritime Organization (IMO) had put forward the concept of Energy Efficiency Operational Indicator (EEOI). However, the ship's energy consumption is not only reflected in its operational period, large amounts of resources and energy are also consumed during shipbuilding. Though the ship cost and per unit GDP energy consumption, we can estimate the consumption of shipbuilding. EEOI will evaluate more comprehensively, if it can take the consumption as an amendment.

Resizing study of main and auxiliary engines of the container vessels and their contribution to the reduction of fuel consumption and GHG

15th Annual General Assembly International Association of Maritime Universities, IAMU AGA 2014 - Looking Ahead: Innovation in Maritime Education, Training and Research, page 443-454, 2014

Author: De Melo, G.
Author: Echevarrieta, I.

The maritime industry has great potential for improving energy efficiency in both new builds and existing ships. It is, therefore, necessary to identify the areas where improvements can be made to reduce fuel consumption, and influence to the shipowners, shipyards and designers of ships on the need to implement these improvements in energetic efficiency and to achieve a reduction of between 25% and 75% of CO2 emissions as IMO report 2009 provides, making ships even more environmentally friendly. The study was conducted focusing on one type of ship such as containership, compiling a database of these ships built from 2000 to 2014. The 3618 ships comprising the study were taken from the database of Lloyd's Register of Shipping. With all the technical data on each of the ships, we proceeded to relate the main and auxiliary power, with the operating speed of the vessel, its displacement and GT, by size, age and generation ships. All the above comparisons were made according to ship sizes, graphically and analytically in which interesting conclusions could be drawn in the relevant dimensioning of the main and auxiliary engines, as well as the operation of the ship. Because of the current crisis some owners have already begun to change their size criteria of propulsion and auxiliary engines of these vessels, their management and operation as well as their speed. Another significant finding was the identification of some shipyards that build their ships with an oversize and exaggerated power of the main and auxiliary engines, regardless of the effect on increasing fuel consumption and impact on the environment. Finally, we have performed a comparative study of EEOI of these vessels by size and age to determine the environmental signature and their evolution. All this leads us to determine a set of measures to be applied, for example, power reduction or derating, etc. on existing ships and applied to new designs, thus reducing the propulsion and auxiliary power of these ships and collaborating to reduce greenhouse gases.

Strategy research on ship speed down and exploit high-viscosity fuel
Journal of Chemical and Pharmaceutical Research, volume 6, issue 9, page 456-462, 2014
Author: Zhang, G.
Author: Yin, Z.
Ships to save fuel oil are focused in the field of marine energy efficiency and emission reduction. To reduce shipping costs, improve economic operation and increase shipping profits, shipping companies take measures to slow down main engine and burn high-viscosity fuel oil. The main engines, auxiliary engines and boilers of COSCO container vessel loading 10000 containers combust the inferior fuel oil with the high viscosity at 700cst, it is analyzed and calculated in this paper. The results show that, steam consumption to heat the inferior high viscosity fuel oil is increased. When the main engine mean speed is reduced to 50-55RPM, the ship's actual speed is 11-12kn, navigational speed of container vessel is very low, it's save fuel oil is very significant, fuel-efficient reaches to limit.

Study on the hydrodynamic characteristics of contra-rotating propeller system
Proceedings of the International Offshore and Polar Engineering Conference, page 697-702, 2014
Author: Oh, S.
Author: Lee, J.
Author: Paik, K.-J.
Author: Choi, S.
Author: Park, H.-G.
Author: Hoshino, T.
Recently, interest in the development of the ships with higher energy efficiency is rapidly increasing in many shipping and shipbuilding companies, as the regulations on reduction of the greenhouse gas emission are reinforced. In this study, a number of model tests were carried out for a selected model ship with CRP (Contra-Rotating Propeller) system at the towing tank of Samsung Ship Model Basin (SSMB). In order to investigate the hydrodynamic characteristics of CRP, propeller open water, self-propulsion, and propeller position variation tests were performed. Based on the experimental results, the ITTC (International Towing Tank Conference) performance prediction method is applied for ships with CRP in three different ways. CRP system is regarded as a single propulsion unit or a combination of two propellers. The extrapolation method of CRP performance as a combination of two propellers can be analyzed by comparing open water test results with CRP set-up and individual open water test results.

The cost to quality ratio in terms of voyage energy efficiency
Advanced Materials Research, volume 1036, page 1060-1065, 2014
https://doi.org/10.4028/www.scientific.net/AMR.1036.1060
Author: Acomi, N.
Author: Acomi, O.C.
Author: Bostina, A.L.
Author: Bostina, A.
Shipping is permanently engaged in efforts to regulate the voyage energy efficiency and to control the marine GHG emissions. In order to achieve this, the International Maritime Organization (IMO) has developed a series of technical and operational measures. The Energy Efficiency Operational Index is one of the operational measures that can be used as a monitoring tool for the voyage optimization and represents the mass of CO<inf>3</inf> emitted per unit of transport work. The purpose of this study is to analyze the competitiveness of using different types of marine fuels during the voyage and also to emphasize their influence over the Energy Efficiency Operational Index. The emissions from ships are directly proportional to the bunker consumption and with its quality, and this paper presents the Energy Efficiency Operational Index value for one complete voyage, varying the type of fuel for different legs for the main consumers: main engine, diesel generators, boiler and inert gas generator. The results consist in the cost to quality ratio, where the cost is the sum of money spent for different types of fuel and the quality is the ship's Energy Efficiency Operational Index. The cost-to-quality ratio is presented in graphs in order to allow the ship-owner to choose the solution of protecting the marine environment, acting over the EEOI, based on the cost involved. © (2014) Trans Tech Publications, Switzerland.

The impact of port operations on efficient ship operation from both economic and environmental perspectives
Maritime Policy and Management, volume 41, issue 5, page 444-461, 2014
https://doi.org/10.1080/03088839.2014.931607
Author: Moon, D.S.-H.
Author: Woo, J.K.
Recently, shipping lines have focused on efficient ship operation, which relates to energy efficiency issues in shipping and, particularly, to operational issues such that the minimisation of fuel consumption and resulting greenhouse gas emissions. Efficient ship operation in container lines is closely related to the ship's time at sea and ship's time in port. Reduction in port time, thanks to high-quality port operations, allows improvement in the operational efficiency of a liner service by reducing the fuel consumption of a ship at sea and its resulting CO2 emissions. The main goal of this article is to investigate how time in port affects efficient ship operation in terms of operating costs, CO2 emissions and externalities. For this, as a methodology, a simulation based upon system dynamics is introduced. Major finding is that less time in port resulting from the improvement of port operations contributes to efficient ship operation in terms of operating costs, amount of CO2 emissions and external effects in the liner shipping industry. In particular, a sensitivity analysis on efficient ship operation vis-à-vis the quality of port operation shows that bigger ships need to select highly productive calling ports that provide less time in port. © 2014 Taylor & Francis.

The influence of different types of marine fuel over the energy efficiency operational index
Energy Procedia, volume 59, page 243-248, 2014
https://doi.org/10.1016/j.egypro.2014.10.373
Author: Acomi, N.
Author: Cristian Acomib, O.
One of the main concerns of our society is certainly environmental protection. The international efforts for maintaining a clean environment are various and this paper refers to the efforts in the maritime transport field. The subject of our study is the concept of Energy Efficiency Operational Index (EEOI), developed to provide ship-owners with assistance in the process of establishing the emissions from ships in operation, and to suggest the methods for achieving their reduction. As a monitoring tool, EEOI represents the mass of CO<inf>2</inf> emitted per unit of transport work. Using the software developed by the authors, it will emphasize the variation of the EEOI value for one vessel using different types of fuel during the laden and ballast voyages, for a period of three months, as stated in the Ship's Log Books. The main consumers considered are Main Engine, Diesel Generators and steam Boilers, and the types of fuel used will be as per charter party agreements and following the specific international and local rules and regulations. The results for the quality parameter EEOI and the average cost of achieving them will be included in compared cost-To-quality graphs, in order to underline the profitability of the studied methods for minimizing the air emissions. ©2014 The Authors.

Wise port & business energy management: Portfacilities, electrical power distribution
2014 IEEE Industry Application Society Annual Meeting, IAS 2014, 2014
https://doi.org/10.1109/IAS.2014.6978475
Author: Parise, G.
Author: Parise, L.
Author: Martirano, L.
Author: Chavdarian, P.B.
Author: Su, C.-L.
Author: Ferrante, A.
The paper deals with the relevance of analyzing the necessary development and of proposing a plan for research and remodeling the electrical infrastructures of port facilities. Good energy management principles, as well as electrical distribution architecture have a vital impact on performance of the installed system throughout its lifecycle. The ports are the interface of maritime transport and are integrated in the surrounding land. They are required to arrange their electrical power distribution system, possibly in microgrids that is, as a utility system, appropriate and adequate even to power the ship from shore. Harbors must have an energy master plan and their areas have to be considered as a unique territory. The energy service management for electrical distribution systems has to be carried out like a new occasion of economic business by the port authorities. © 2014 IEEE.

Development of a calculation method for fuel consumption of ships in actual seas with performance evaluation

Proceedings of the International Conference on Offshore Mechanics and Arctic Engineering - OMAE, volume 9, 2013
https://doi.org/10.1115/OMAE2013-11297
Author: Tsujimoto, M.
Author: Kuroda, M.
Author: Sogihara, N.
Greenhouse gas shall be reduced from shipping sector. For that purpose the regulation of EEDI (energy efficiency design index for new ships) and SEEMP (ship energy efficiency management plan) have been entry into force from 2013. In order to improve the energy efficiency in ship operation it is necessary to predict the fuel consumption accurately. In actual seas the wave effect is the dominant component of the external forces. In particular it is well known the bow shape above water affects the added resistance in waves. To reflect the effect of the bow shape a method which takes into account the result of simplified tank tests is proposed here. Using the results of tank tests the effect of the bow shape above water can be evaluated with accuracy as well as with robustness. Regarding to the fuel consumption it should be evaluated by combining the ship hydrodynamic performance with the engine characteristics. Especially the operating limits of the main engine, such as the torque limit and the over load protection, are affected to the ship hydrodynamic performance. In rough weather condition the revolution of the main engine will be reduced to be below the operating limits of the engine. This causes the large decrease of ship speed. To prevent the increase of fuel consumption, a control system by Fuel Index as an index of fuel injection has been applied to some ships. The calculation method for the fuel consumption by using Fuel Index is presented. In this paper following contents are reported; 1) development of a calculation method for the added resistance due to waves combined with the simplified tank tests in short waves, 2) comparison of the calculation method with onboard measurement, 3) development of a calculation method for the fuel consumption considering the engine operating mode in actual seas and 4) comparison of the method with onboard measurement of a container ship. From these investigations the availability of the present method is confirmed.

Development of an integrated energy efficiency control system for ship power balance and diesel generator fuel consumption optimization

Conference Record - IAS Annual Meeting (IEEE Industry Applications Society), 2013
https://doi.org/10.1109/IAS.2013.6682477
Author: Giannoutsos, S.V.
Author: Manias, S.N.
In the maritime industry, high fuel costs cause changes to the vessel's operating profile regarding the use of Main Engine (M/E) and auxiliary machinery. This results in deviations from the original load balance study and Power Management System (PMS) adjustments that were performed during shop tests, as Diesel Generators (D/Gs) often operate in parallel at low load far from their best efficiency points. In this paper, an integrated process control scheme is proposed in order to improve power balance in the vessel's air ventilation and central water cooling systems, involving the variable frequency control of Engine Room (E/R) Fans and Cooling Sea Water Pumps (C.S.W P/Ps). Experimental results derived from system retrofit application to a typical 105,000 DWT Aframax tanker vessel verify the effectiveness of the proposed control scheme towards achieving significant energy savings, which are in accordance with the theoretical results obtained from the air and heat balance studies. Power balance improvement leads not only to fuel savings but also to the use of only one D/G while sea going. Power quality measurements show compliance with relevant marine harmonic standards.

Optimization using viscous flow computations for retrofitting ships in operation
Computational Methods in Marine Engineering V - Proceedings of the 5th International Conference on Computational Methods in Marine Engineering, MARINE 2013, page 69-80, 2013
Author: Brenner, M.
Author: Zagkas, V.
Author: Harries, S.
Author: Stein, T.
Shipping is commonly believed to be the most energy efficient mode of transport. Nonetheless, the shipping industry is required to reduce its environmental impact. The IMO has developed a package of measures for reducing shipping's CO2 emissions within an agreed timetable for adoption (Energy Efficiency Design Index for the design of new ships and the Ship Energy Efficiency Management Plan for the operational phase). Approximately three-quarters of the vessels are rather young, so most ships in operation need solutions to reduce their pollution. In general, the suitable solutions differ from ship newbuilding, in which hull form optimization and newest machinery technology can be readily employed. This paper will demonstrate how simulation-driven design using the CAE platform FRIENDSHIP-Framework, coupled to the viscous flow CFD solver SHIPFLOW, can be used to efficiently develop optimized solutions for the retrofitting of ships in operation. Systematic variation as well as formal optimization is used in the process, coupling automated generation of geometry variants to simulation. The retrofitting solutions that will be covered are measures to decrease the resistance or increase the propulsive efficiency of the ship. Typical examples are energy-saving devices that are added to the ship or replacing parts of the hull or the appendages with new, optimized shapes. The validity of the concept will be demonstrated with the results from case studies that include a motor yacht, as well as a commercial RoPax ship.

Ship energy assessment by numerical simulation marine 2013
Computational Methods in Marine Engineering V - Proceedings of the 5th International Conference on Computational Methods in Marine Engineering, MARINE 2013, page 530-540, 2013
Author: Coraddu, A.
Author: Figari, M.
Author: Savio, S.
Traditionally, the environmental performance of marine systems in terms of exhaust emissions has never been among the primary concerns of the maritime industry. However, this situation is going to quickly change, as in the shipping sector Energy Efficiency Design and Operation IMO Indexes testify. In such a context it is worth mentioning that the greening of shipping operations can be effectively achieved by a suitable system design and energy management. Ship Energy Efficiency Management Plan (SEEMP) should be a tool to monitor and to optimize ship and fleet efficiency performance; as a consequence it will have a deep impact on the reduction not only of the exhaust gas emissions but also of the operational costs. To reach this goal energy modelling represents the keyword. In particular, the estimate by simulation, of onboard power generation, consumption and losses plays a fundamental role for driving, for instance, a decision support tool toward the optimal choices as far as energy management is concerned. To this purpose, in the paper the authors present the outcomes of the activities carried out to develop a simulation tool able to represent an overall ship system from the energetic point of view. Modelling approach and the results of numerical simulations performed by the authors to estimate vessel fuel consumption in a real case study are shown and discussed.

Research on the energy efficiency improvement for existing ships
ICTIS 2013: Improving Multimodal Transportation Systems - Information, Safety, and Integration - Proceedings of the 2nd International Conference on Transportation Information and Safety, page 2303-2308, 2013
Author: Sun, X.
Author: Yan, X.
Author: Wu, B.
For numerous existing ships, reducing fuel consumption is achieved mainly by applying operational measures rather than technical measures. This paper outlines the operational approaches for energy efficiency enhancement. Methodologies for calculating greenhouse gas emissions or fuel consumption are presented from three perspectives: international maritime transports, regional or national shipping, and individual ships. A description model between EEOI and environment factors or service conditions was developed. It is suggested that the energy efficiency management should be planned on the base of the relationship model between ship energy efficiency and input variables.

The energy efficiency of domestic passenger shipping in Greece
Maritime Policy and Management, volume 40, issue 6, page 574-587, 2013
https://doi.org/10.1080/03088839.2013.779040
Author: Tzannatos, E.
Author: Papadimitriou, S.
By virtue of its coastal and insular character, Greece undoubtedly holds a leading position in Europe with regard to domestic passenger shipping. In the quest to improve economic competitiveness and curb carbon emissions in Greece, the energy efficiency and carbon footprint assessment of domestic passenger shipping has so far attracted little attention in comparison to other energy consumers, including other modes of transport. In the current work, energy and carbon efficiency of domestic passenger shipping in Greece during the decade 2001-10 is expressed and estimated through the associated intensity terms, i.e. the consumed energy and carbon dioxide emissions per unit of transport work performed. The energy and carbon efficiency assessment is facilitated through comparisons with relevant shipping operations in Europe and other regions of the world. Furthermore, the influence of the market's seasonal and spatial characteristics is also examined. Finally, the analysis of energy efficiency provides the means for assessing the influence of fuel expenditure upon the overall cost of the supplied services.

Energy-efficient path planning for fully propelled AUVs in congested coastal waters
OCEANS 2013 MTS/IEEE Bergen: The Challenges of the Northern Dimension, 2013
https://doi.org/10.1109/OCEANS-Bergen.2013.6608168
Author: Koay, T.-B.
Author: Chitre, M.
To navigate safely in littoral waters with complex currents and busy shipping activities, it is crucial to have small autonomous vehicle with full propulsion capability. Such systems typically have limited endurance. We therefore investigate the feasibility of improving their endurance using current-aware path planning algorithms that allow active propulsion to move the vehicle into favorable currents or to avoid obstacles. The strategy adopted is to minimize the use of propulsion while leveraging favorable currents as much as possible. We perform simulations using environmental data and operational constraints of autonomous vehicles. The current field is assumed to be time-invariant over the period of the mission. Simulation results for 40 randomly generated source-destination pairs in Singapore Strait are presented. The performance is quantified by comparing the energy consumption of the path generated against the shortest distance path. Simulation results show that we are able to save 30-90% energy if the vehicles are allowed to drift along with the current. When the minimum speed of the vehicle is constrained to 2.5 knots, the energy savings could range from a few percent to more than 50%, depending on the currents along the route. The expected energy saving is the largest when the vehicle is allowed to operate at speeds comparable to water current while the savings diminish when the vehicle is required to operate at higher speed. © 2013 IEEE.

Exergetic cost analysis of marine diesel engine waste heat recovery system based on matrix model thermo-economics
Advanced Materials Research, volume 744, page 566-570, 2013
https://doi.org/10.4028/www.scientific.net/AMR.744.566
Author: Wang, Z.Y.
Author: Zhou, S.
Author: Li, R.H.
Author: Li, C.L.
Author: Zhang, H.F.
Diesel engine is the main power of the marine vessel, its thermal efficiency is the highest in all thermodynamic engines, but still more than 50% of the energy is not being used, so making full use of the waste heat of the main diesel engine scientifically and effectively, not only reduce the fuel consumption and the shipping cost, but also reduce the value of the ship EEDI effectively. To be able to design and transform the green ship, thermodynamic analyzing of the ship power plant and master the energy utilization of each part is necessary. Raising the efficiency of an energy system is within the domain of thermodynamics. Raising the efficiency cost-effectively (thermo-economics) is a multi-disciplinary problem in which thermodynamics interfaces other disciplines of knowledge which in this particular case are design, manufacture and economics. In this paper, it introduces the analysis method of thermo-economics briefly, the thermal economic analysis of the marine diesel engine waste heat recovery system is taken based on matrix model thermo-economics, and the unit exergetic cost is calculated. Some thermal equipments of the system are showed with the result of the performance evaluation. The results shows that thermo-economics is a promising tool for the analysis of complex energy systems. This method also provides a great prospect for energy system optimizations. © (2013) Trans Tech Publications, Switzerland.

Comparing rail fuel efficiency with truck and waterway
Transportation Research Part D: Transport and Environment, volume 24, page 69-75, 2013
https://doi.org/10.1016/j.trd.2013.06.002
Author: Tolliver, D.
Author: Lu, P.
Author: Benson, D.
This paper presents a railroad energy efficiency model used to estimate the fuel economies for classes of trains transporting various commodities. Comparable procedures are used to estimate truck and waterway fuel consumption. The results show that coal unit trains are 4.5-5.0 times more energy efficient than movements in the largest trucks allowed in the eastern and western regions of the US, unit grain train movements in the central US are 4.6 times more fuel efficient, soda ash unit train and non-unit train shipments are 4.9 and 3.2 times more efficient, and ethanol unit train and non-unit train movements are 4.8 and 3.0 times more efficient. In terms of barge traffic, coal unit train and non-unit train are 1.3 and 0.9 times as energy efficient in the eastern US, grain unit train and non-unit train movements are 1.7 and 1.0 times more efficient from Minneapolis to the Gulf of Mexico, and grain unit train and non-unit train movements are 1.0 and 0.7 times more fuel efficient from the Upper Ohio River to the Gulf of Mexico.

The energy-saving LCL model construction and calculation of foreign trade container shipping
Energy Education Science and Technology Part A: Energy Science and Research, volume 31, issue 2, page 1013-1018, 2013
Author: Hong, X.
Author: Liu, J.
With the rapid development of global economic, strengthening of international trade, the foreign container throughput of the world develop quickly, resulting in increased effect of container transport on the road. Because of energy-saving LCL shipping characteristics, energy-saving LCL shipping significant impact on urban roads. We have Used logit choice model to build the foreign container energy-saving Less container Loading(LCL) shipping model, and using MATLAB to calculate survey datum, the result is foreign trade container shipping mode is mainly relationship with the cargo volumes. Although shipping time affect the choice, but compared to the volume, it is relatively small. Final I analyzed the limitations of the model.

How would EEDI influence Chinese shipbuilding industry?
Maritime Policy and Management, volume 40, issue 5, page 495-510, 2013
https://doi.org/10.1080/03088839.2013.797121
Author: Zheng, J.
Author: Hu, H.
Author: Dai, L.
This paper is a preliminary attempt to illustrate how the shipbuilding industry in China would be influenced by the implementation of International Maritime Organization's Energy Efficiency Design Index (EEDI), a measure on the amount of CO2 emitted by a ship for one unit of cargo carried. It is supposed to promote more energy-efficient ship designs and gradually reduce the emissions from the world fleet, as CO2 emissions from shipping account for a larger proportion of all global emissions of the greenhouse gas (GHG). However, the implementation of EEDI is not easy given the number of stakeholders involved, the split incentives and the lack of technical knowhow in some of the major shipbuilding countries such as China. This paper identifies the characteristics of energy consumption in shipping and the stakeholders involved in the EEDI application process, analyses the relationships among stakeholders in the shipbuilding industry in China, and points out the drivers and barriers in the implementation. It also discusses the impacts of EEDI on Chinese shipbuilding industry, and explores future scenarios including the possible income and China's position in the global shipbuilding industry using the two cases of typical Chinese shipbuilding firms. Some policy recommendations are provided to the shipbuilders and the governments, to promote the objective of the GHG reduction as well as the development of Chinese shipbuilding industry. Finally, it concludes that EEDI has profound impacts on not only China but also all shipbuilding countries around the world, and it may even trigger another migration of shipbuilding industry in the future.

Hydrodynamic optimization of pre-swirl stator by CFD and model testing
International Shipbuilding Progress, volume 60, issue 1-4, page 233-276, 2013
https://doi.org/10.3233/ISP-130092
Author: Kim, K.
Author: Leer-Andersen, M.
Author: Werner, S.
Author: Orych, M.
Author: Choi, Y.
With environmental concerns becoming one of the most important issues facing the shipping/ship-building industry today, SSPA has witnessed strong demand for the development of energy saving devices (ESD). SSPA anticipates that the demand will be greater to respond to new requirements set by the IMO regulation on energy efficient design index (EEDI). SSPA has been involved in many joint research projects in developing energy saving solutions. Daewoo Shipbuilding and Marine Engineering Co. Ltd. (DSME) has developed several ESDs in cooperation with SSPA, where SSPA has tested most of the ESDs designed by DSME over the last 10 years. The pre-swirl stator (PSS) is a device mounted on the stern boss just upstream of the propeller (see Fig. 6 or Fig. 33). It is designed to generate pre-swirl flow to the propeller in order to gain a favorable interaction with the propeller that improves the propulsive efficiency and results in a power reduction. This paper is a full description of one of the developments of PSS from the early design stage, optimization phase, and confirmation by model tests to validation through sea trial tests.

Design of passive harmonic filters to enhance power quality and energy efficiency in ship power systems

Conference Record - Industrial and Commercial Power Systems Technical Conference, 2013
https://doi.org/10.1109/ICPS.2013.6547328
Author: Su, C.-L.
Author: Hong, C.-J.
Variable frequency drives (VFDs) driven motors for pumps, blowers and fans, and heating, ventilation and air conditioning (HVAC) equipment on ships are rapidly growing in number. Due to their nonlinear nature, they become the major sources of harmonics in electrical power systems on board. To mitigate the harmonics, passive harmonic filters that are an LC circuittuned to each harmonic order to be filtered have been used. In compliance with the new rule in the emission regulation of the maritime industry, the installation of passive filters has attracting more attention in managing service power energy efficiency. This paper proposed a design of passive filters to reduce the voltage and current distortions in ship power systems while increasing energy efficiency with power factor corrected by passive filters. The inductance and capacitance in the filter are designed according to harmonic currents and reactive power required. The on-board power system of a practical ship with a great number of VFDs is analyzed to illustrate the filter design. The field testing results verified the performance of system with the filter designed by the proposed method. © 2013 IEEE.

Maritime superconductivity perspectives

IEEE Transactions on Applied Superconductivity, volume 23, issue 3, 2013
https://doi.org/10.1109/TASC.2013.2241384
Author: Ross, R.
Author: Meijer, C.G.
Author: Hunik, R.
The present paper reports on the ongoing studies into the perspectives of maritime superconductivity (SC). Maritime applications follow a similar pattern as on-shore applications when it comes to performance if the competition is weak. For large scale applications like propulsion, power supply, and other machinery, the character of an isolated energy system onboard greatly influences the perspectives of maritime SC. The paper compares the energy chains of propulsion configurations and discusses the relations with energy carriers, storage, and conversions. It is shown that perspectives more or less follow the developments on all electric shipping: i.e., as for energy efficiency short range shipping and dynamic behavior favor SC technology; high-temperature superconducting engines may also be an improvement if electric propulsion is selected for other reasons than efficiency. High-temperature superconductor degaussing is promising, but demands adjustments. Maritime SC perspectives often depend on developments in other areas like fuels, conversions, and power electronics. © 2002-2011 IEEE.

Will the ship energy efficiency management plan reduce CO2 emissions? A comparison with ISO 50001 and the ISM code

Maritime Policy and Management, volume 40, issue 2, page 177-190, 2013
https://doi.org/10.1080/03088839.2012.757373

Author: Johnson, H.
Author: Johansson, M.
Author: Andersson, K.
Author: Södahl, B.

The Ship Energy Efficiency Management Plan (SEEMP) is the sole international regulatory instrument expected to affect rising CO2 emissions from shipping in the short-term. In this article, we discuss present gaps in the SEEMP guidelines through a comparison with the international standard for energy management systems (EMS), ISO 50001, and with the International Safety Management (ISM) code, which sets requirements for safety management systems in shipping companies. We show that the SEEMP lacks crucial features found in typical management system standards, such as requirements on policy and management reviews. Moreover, best-practice in the form of the ISO 50001 addresses important aspects, such as monitoring, energy auditing, design, and procurement processes in much more detail. In the context of previous research on these instruments and on energy efficiency in general, we argue that these gaps may be detrimental to the success of the SEEMP, both from the societal perspective of CO2 abatement and from the perspective of companies' success in energy management. This requires further attention by academia, policy-makers and industry.

Design of the evolutionary LNG carrier "SAYAENDO"

IGT International Liquefied Natural Gas Conference Proceedings, volume 2, page 1169-1189, 2013

Author: Sato, K.
Author: Chung, H.

MHI has completed the development and received firm orders for a new-generation LNG carrier design marking an evolutionary advance for LNG carriers adopting the Moss-Rosenberg cargo containment system well proven for robustness and reliability. The product name SAYAENDO, or peapod in Japanese, aptly describes the continuous weather cover for the cargo tanks that is integrated with the ship's hull, constituting a visual and conceptual distinction from the ubiquitous hemispherical covers found on conventional Moss LNGCs. This new configuration benefits from greater structural efficiency thus enabling size and weight reductions, resulting in improvements in fuel consumption and operating economies. This paper presents how state-of-the-art engineering verification methodologies were applied to validate the new design to meet the stringent technical, regulatory and safety requirements of the LNG shipping industry, as well as the design of SAYAENDO itself. Firstly, structural design analysis using MHI-DILAM is described. MHI-DILAM is an advanced structural assessment approach developed by MHI, applied to verification of yield and buckling limit states with design waves and full stochastic analysis for fatigue strength performed on a whole ship model incorporating loads derived from first principles direct calculations. Secondly, independent structural design verification as part of classification requirements or in support of optional enhanced notations is described, giving insight into the SAYAENDO's unique hull concept highlighting those aspects that were considered as part of the validation of the overall design and safety philosophy. Examples of how risk assessment methods were employed to evaluate unconventional arrangements are also introduced. Finally, the main characteristics of 155k-m3 LNGC are described, this being the finished product resulting from the development. Suitability of SAYAENDO to ice and cold operations is also briefly discussed.

Impact of waste heat recovery systems on energy efficiency design index and energy efficiency operational indicator of a conceptional large container ship

Proceedings of the 26th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2013, 2013

Author: Ma, Z.
Author: Yang, D.
Author: Chen, H.

The increase of ship's energy utilization efficiency and the reduction of greenhouse gas emissions have been high lightened in recent years and have become an increasingly important subject for ship designers and owners. The International Maritime Organization (IMO) is seeking measures to reduce the CO2 emissions from ships, and their proposed Energy Efficiency Design Index (EEDI) and Energy Efficiency Operational Indicator (EEOI) aim at ensuring that future vessels will be more efficient. Waste heat recovery can be employed not only to improve energy utilization efficiency but also to reduce greenhouse gas emissions. In this paper, a typical conceptual large container ship employing a low speed marine diesel engine as the main propulsion machinery is introduced and three possible types of Waste Heat Recovery Systems(WHRS) are designed. To calculate the Energy Efficiency Design Index (EEDI) and Energy Efficiency Operational Indicator (EEOI) of the given large container ship, two software packages are developed. Impact of performance of Waste Heat Recovery Systems(WHRS), as well as different ship design parameters, have been varied to see influence of these parameters on the EEDI. From the viewpoint of operation and maintenance, lowering the ship speed and improve container load rate can greatly reduce Energy Efficiency Operational Indicator (EEOI) and further reduce total fuel consumption. Although the large container ship itself can reach the International Maritime Organization requirements of EEDI at the first stage, i.e. with a reduction factor 10% under the reference line value, the proposed waste heat recovery systems can improve the ship EEDI reduction factor to 20% under the reference line value.

Multi-criteria grey-fuzzy comprehensive evaluation model of energy-saving and emission reduction: An empirical study on port and shipping system in China

Proceedings of the 26th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, ECOS 2013, 2013

Author: Xiong, Y.
Author: Zhang, Z.

Port and Shipping System (PSS), including port, shipping and related business, is an important part of the transportation industry and has a tremendous space and potential in energy-saving and emission reduction (ESER) aspects. In this paper, in accordance with the guidance and requirements of China's ESER policy, the evaluation index system and its weight were determined based on the method of analytic hierarchy process (AHP). Then, fuzzy comprehensive evaluation method was used to estimate for the effectiveness of ERES in PSS. Subsequently, the grey correlation analysis is used to rank the evaluation results from the Fuzzy-AHP method. Finally, PSS of a certain province was set as a case for empirical study. Consequently, a Multi-level Grey-Fuzzy comprehensive evaluation model was established for evaluating the effectiveness of ESER in PSS of China. The result shows that the Multi-level Grey-Fuzzy comprehensive evaluation model can solve the information loss and sequencing problems of the evaluation results, and make the results more objective and reasonable. Thus, the model can provide a guidance and reference for evaluating the ESER in PSS of China.

SunPower's Maxeon Gen III solar cell: High efficiency and energy yield
Conference Record of the IEEE Photovoltaic Specialists Conference, page 908-913, 2013
https://doi.org/10.1109/PVSC.2013.6744291
Author: Smith, D.D.
Author: Cousins, P.J.
Author: Masad, A.
Author: Westerberg, S.
Author: Defensor, M.
Author: Ilaw, R.
Author: Dennis, T.
Author: Daquin, R.
Author: Bergstrom, N.
Author: Leygo, A.
Author: Zhu, X.
Author: Meyers, B.
Author: Bourne, B.
Author: Shields, M.
Author: Rose, D.
SunPower is currently shipping the highest efficiency commercial solar panel in the 20% efficiency E-series with high reliability, and proven high energy yield per rated watt [1,2]. This paper discusses the next generation SunPower solar cell, the Maxeon Gen III used in the recently launched X-series modules. Higher efficiency, improved field performance from lower temperature coefficient, improved reliability due to low reverse breakdown voltage and a uniform dark appearance are the characteristics of this technology. The SunPower Maxeon Gen III solar cell is a high efficiency design intended to reduce cost throughout the value chain by improved performance. The improved efficiency is due to a passivated contact structure lowering the cell emitter recombination to approximately 15 fA/cm2 [3]. The process is currently in full scale manufacturing at approximately 100 MW per year in the SunPower's Fab2 production facility in the Philippines.

The influence of the voyage parameters over the Ship's Energy Efficiency Operational Index
Proceedings of the 18th International Conference of Hong Kong Society for Transportation Studies, HKSTS 2013 - Travel Behaviour and Society, page 641-646, 2013
Author: Acomi, N.
Author: Acomi, O.C.
It is well known that air pollution is a serious problem that affects our society today. The maritime transport is responsible for a part of that pollution and, in order to reduce it, the International Maritime Organization has developed a series of measures, grouped in three main directions: technical, operational and management related. The subject of our study is the concept of Energy Efficiency Operational Index (EEOI), developed by the IMO to provide ship-owners and ship-operators with assistance in the process of establishing a mechanism to achieve the limitation or reduction of emissions from ships in operation. It represents the mass of CO2 emitted per unit of transport work. The aim of the paper is to emphasize the change of EEOI by changing different voyage parameters. The conclusions of the study will reveal that improvement is possible, can be pre-determined quantitatively and will establish the main directions of voyage energy optimization.

An exploratory study on the working principles of energy saving devices (ESDs) - PIV, CFD investigations and esd design guidelines

Proceedings of the International Conference on Offshore Mechanics and Arctic Engineering - OMAE, volume 5, page 25-34, 2012
https://doi.org/10.1115/OMAE2012-83053
Author: Dang, J.
Author: Dong, G.
Author: Chen, H.
The Maritime Research Institute Netherlands (MARIN) has recently started a Joint Industry Project (JIP) called ESD-JILI, investigating the working principles of energy saving devices (ESDs). Within the framework of this JIP, three ESDs have been selected and thoroughly investigated. They are a Pre-Duct with an inner Stator (PDS), a Pre-Swirl Stator (PSS) with asymmetric blade design and Hub Fins (HFs). The investigations have been carried out by using dedicated force and moment sensors to measure all the components of the ESDs independently during the propulsion tests, by using Particle Image Velocimetry (PIV) to measure the flow before, in-plane and behind the propeller and the ESDs, and by using Smart Ship Model technology (Wijngaarden 2011) to simulate the full-scale wake field during the model tests to gain insights on scale effects of the ESDs. At the same time, computational fluid dynamics (CFD) calculations are also carried out in order to further deepen the understanding of the working principles of the selected ESDs, and to assist the ESDs designs under certain guidelines. Some of the results of the study have been published to the Greenship'2011 Conference (Dang et al 2011). The flow details around the propulsion system with the PDS, which were obtained by both PIV measurements and CFD calculations, and the energy balance of the ship-propulsion system with a PDS are further investigated and reported here. Based on the results of the studies, the principle guidelines for ESD designs for single screw merchant ships have been proposed.

Energy-efficient electronic light sources for marine vessels

Conference Record - IAS Annual Meeting (IEEE Industry Applications Society), 2012
https://doi.org/10.1109/IAS.2012.6373993
Author: Su, C.-L.
Author: Yeh, Y.-H.
Author: Liu, C.-H.
Author: Lin, C.-W.
Author: Wang, L.-W.
Author: Lee, C.-C.
Traditional marine lighting with low efficiency has been gradually replaced by high-efficiency electronic lighting equipment. However, these electronic lighting equipment are mainly for land use, and ignore unique lighting requirements of marine use, such as, temperature, vibration, etc. To confirm the applicability of land-use electronic light sources in a marine environment, several existing commercial electronic lamps are selected in this paper to replace traditional on-board light sources and then land and on-board tests are conducted according to maritime lighting regulations for comparison with traditional light sources in terms of performance. According to information in the test results, in response to the introduction of electronic lamps, existing ship lighting rules should be appropriately strengthened in terms of lighting and vibration test requirements. Meanwhile, general land-use electronic lamps should be strengthened with respect to vibration and lumens depreciation due to engine room environment. The analysis results can assist shipyards and ship owners in the selection of suitable electronic lamps, and can provide useful information to lighting equipment manufacturers for the development of lighting equipment that are suitable for electronic light sources for marine use.

Evaluation of ship efficiency indexes
Sustainable Maritime Transportation and Exploitation of Sea Resources - Proceedings of the 14th International Congress of the International Maritime Association of the Mediterranean, IMAM 2011, volume 2, page 621-627, 2012
Author: Figari, M.
Author: D'Amico, M.
Author: Gaggero, P.
IMO is introducing two different emission indexes for a vessel: The Energy Efficiency Design Index (EEDI) and the Energy Efficiency Operational Indicator (EEOI). The former will be used to assess the design of the vessel, the latter would be used to evaluate the vessel in operation. Both indexes represent the ratio between emissions, in mass of CO2, and the transported cargo quantity per sailed distance. At moment an important debate is focusing on the definition of the 'baseline' values for different ship categories. The collaboration between d'Amico Shipping Company, Registro Italiano Navale and Department of Naval Architecture, Marine Engineering, Electric Engineering of Genoa University provided the framework for a study aimed to evaluate the carbon footprint of the vessels of the D'Amico fleet, the analysis of various aspects of factors effecting the carbon dioxide emissions caused by ships and improvements of fleet energy management techniques. The results of the study can be divided into two main aspects: it is a picture of the actual carbon dioxide emission status of a cargo fleet and it gives the technical instruments and measure tools to start an emission control policy with reference to a ship energy efficiency management plan. © 2012 Taylor & Francis Group, London, UK.

Assessment of ship's emissions using recovery systems
Proceedings of the International Offshore and Polar Engineering Conference, page 789-794, 2012
Author: Sreedhar, K.V.
Author: Al-Zubaidy, S.
In the shipping Industry, fuel consumption is becoming a critical issue with the increase in fuel prices and the pressure to reduce overall carbon emissions. Reduction in fuel consumption could be achieved by either recovering the heat from the engine exhaust or by using green technology to assist propulsion using direct wind power. The work presented is a comparative assessment of the three main types of ships, namely oil tankers, container carrier ships and LNG Carriers. Results of the study illustrate that, the CO 2 emission from a 3,60,000 m3 cargo capacity oil tanker using 10% heat recovery can achieve 11.07 % Energy Efficiency on the Design Index improvement and reduction of 16,358 tones of CO 2 emission per year. Using 32ton capacity Sail-kite (sky sail) can achieve 10.6 % EEDI improvement and 15,664 tons of CO 2 emission reduction per year. It is believed that the savings result from these add-on systems are both economical and attractive and will hopefully stimulate the shipping industry into selecting such solutions well into the foreseeable future. Copyright © 2012 by the International Society of Offshore and Polar Engineers (ISOPE).

Operational options for green ships
Journal of Marine Science and Application, volume 11, issue 3, page 335-340, 2012
https://doi.org/10.1007/s11804-012-1141-2
Author: Sherbaz, S.
Author: Duan, W.
Environmental issues and rising fuel prices necessitate better energy-efficiency in all sectors. The shipping industry is one of the major stakeholders, responsible for 3% of global CO 2 emissions, 14%-15% of global NO X emissions, and 16% of global SO X emissions. In addition, continuously rising fuel prices are also an incentive to focus on new ways for better energy-effectiveness. The green ship concept requires exploring and implementing technology on ships to increase energy-efficiency and reduce emissions. Ship operation is an important topic with large potential to increase cost-and-energy-effectiveness. This paper provided a comprehensive review of basic concepts, principles, and potential of operational options for green ships. The key challenges pertaining to ship crew i. e. academic qualifications prior to induction, in-service training and motivation were discussed. The author also deliberated on remedies to these challenges. © 2012 Harbin Engineering University and Springer-Verlag Berlin Heidelberg.

Probability of achieving the energy efficiency index by Monte Carlo simulation
RINA, Royal Institution of Naval Architects - International Conference on Managing Reliability and Maintainability in the Maritime Industry, Papers, page 107-114, 2012
Author: Figari, M.
Author: Savio, S.
Author: Coraddu, A.
IMO is introducing two different emission indexes for a vessel: the Energy Efficiency Design Index (EEDI) and the Energy Efficiency Operational Indicator (EEOI). Both EEDI and EEOI will be probably used as part of a levy scheme to force the maritime sector to significantly reduce the carbon footprint. At present do exist few ports and/or states applying fees based on ship emissions. The reliability of a regular shipping service, or service reliability, defined as the probability to complete the link within schedule, is an important parameter that greatly influences commercial aspects, as well as the ship carbon footprint. In this paper the authors present a procedure to evaluate the EEOI indicator by Monte Carlo simulation, estimating the total ship fuel consumption as a function of the random variables displacement and speed. A complete series of operating data concerning two years of navigation, for a commercial trade in the Mediterranean Sea, were collected and used to validate the code. © 2012: The Royal Institution of Naval Architects.

Ship design and evaluation for a GHG constrained future
RINA, Royal Institution of Naval Architects - International Conference on the Environmentally Friendly Ship, Papers, page 87-97, 2012
Author: Calleya, J.
Author: Pawling, R.
Author: Smith, T.W.P.
Author: Greig, A.
The future is uncertain, but it is not unreasonable to imagine that it may herald higher energy prices and greater regulation of shipping's Greenhouse Gas (GHG) emissions. With the adoption of the Energy Efficiency Design Index (EEDI) and Ship Energy Efficiency Management Plan (SEEMP) into MARPOL Annex VI there is already some movement towards such a future. It is suggested in this paper that understanding the many components of the "shipping system" can ensure the most robust analysis of economic viability and competitiveness of ship designs both relative to an existing fleet of ships and under possible future regulatory and cost environments. This paper describes the development of some of the methods in the RCUK project "Low Carbon Shipping - A Systems Approach" that can be used to explore 'what if questions around the future of ship design - taking the perspective that a key challenge for design will be around increased energy efficiency and lower GHG emissions.

From the motorways of the sea to the green corridors' carbon footprint: The case of a port in Spain
Journal of Environmental Planning and Management, volume 55, issue 6, page 765-782, 2012
https://doi.org/10.1080/09640568.2011.627422
Author: Carballo-Penela, A.
Author: Mateo-Mantecón, I.
Author: Doménech, J.L.
Author: Coto-Millán, P.
Green corridors are a European concept denoting long-distance freight transport corridors where advanced technology and co-modality are used to achieve energy efficiency and reduce environmental impact. Green corridors consider all types of agents acting in the door-to-door co-modality chains, including ports. Carbon footprints (CF) provide companies, customers and other agents with information related to greenhouse gas (GHG) emissions from the supply chain of products, identifying key points, potential risks and opportunities for improvement. Its application in both the logistic networks and all modes of transport would allow for the creation of green corridors and sustainable motorways of the sea. This paper describes the method which is composed of financial accounts (MC3) used to estimate the CF of a port. It shows the effects of the method on the Port of Gijón (PAG), which steers the existing Gijón/Nantes/Saint-Nazaire motorway of the sea. The extension of the system to all nodes of the shipping line and other transport modes will lead in the long run to a carbon-neutral green corridor. Our findings show the importance of looking at indirect emissions in order to become a carbon neutral port.

Assessing carbon footprint and energy efficiency in competing supply chains: Review - Case studies and benchmarking

Transportation Research Part D: Transport and Environment, volume 17, issue 4, page 293-300, 2012
https://doi.org/10.1016/j.trd.2012.01.002

Author: Rizet, C.
Author: Browne, M.
Author: Cornelis, E.
Author: Leonardi, J.

This article compares the energy consumption and CO 2 emissions of supply chains in Belgium, France and UK looking in particular at, jeans, yogurts, apples, tomatoes and furniture. We use a generic methodology that allows comparability across the supply chain of products, supply chains, and countries. Our benchmarking show relatively high emissions for maritime transport and the consumer leg, while logistics activities such as storage and road freight exhibit relatively low emissions. The influences of distance, retail type, area density and consumer behaviour are also examined. © 2012 Elsevier Ltd.

Propeller efficiency options for green ship

Proceedings of 2012 9th International Bhurban Conference on Applied Sciences and Technology, IBCAST 2012, page 155-161, 2012
https://doi.org/10.1109/IBCAST.2012.6177547

Author: Sherbaz, S.
Author: Duan, W.

Environmental issues and rising fuel prices necessitate better energy-efficiency in all sectors. Shipping industry is one of the stakeholders in environmental issues. Shipping industry is responsible for 3 % of global CO 2 emissions, 14-15 % of global NO X emissions and 16 % of global SO X emissions. Shipping industry also has critical role in global economy since 90 % of world trade goods are carried by ships. This trade has little or no alternate means of transportation other than ships at this point and foreseeable future. In addition, shipping is a better environmental option for transportation compared to other available means of transportation due to lowest gCO 2/ton.km emissions. European Union (EU) and United Nations Framework Convention on Climate Change (UNFCCC) are pushing hard to regulate emissions in all sectors. International Maritime Organization (IMO) is working on regulating emissions from shipping with unprecedented attention and it seems clear that emissions from shipping will be regulated within few years. Furthermore, continuously rising fuel prices are also a reason to focus on new ways for better energy-effectiveness in addition to better environmental performance. Green ship concept requires exploring and implementing technologies/practices on ships to reduce emissions. Propeller efficiency is an important area to increase efficiency and reduce emissions since propellers are merely around 60 % efficient. This paper provides a comprehensive review of the propeller efficiency options to increase efficiency and reduce emissions. The paper will discuss basic concepts and principles, and popular technologies for enhancing propeller efficiency. The author will also comment on the core-issues and challenges, and scope for future development in propeller efficiency area. © 2012 IEEE.

Assessing the potential of hybrid energy technology to reduce exhaust emissions from global shipping
Energy Policy, volume 40, issue 1, page 204-218, 2012
https://doi.org/10.1016/j.enpol.2011.09.046
Author: Dedes, E.K.
Author: Hudson, D.A.
Author: Turnock, S.R.
The combination of a prime mover and an energy storage device for reduction of fuel consumption has successfully been used in automotive industry. The shipping industry has utilised this for conventional submarines. The potential of a load levelling strategy through use of a hybrid battery-diesel-electric propulsion system is investigated. The goal is to reduce exhaust gas emissions by reducing fuel oil consumption through consideration of a re-engineered ship propulsion system. This work is based on operational data for a shipping fleet containing all types of bulk carriers. The engine loading and the energy requirements are calculated, and sizing of suitable propulsion and the battery storage system are proposed. The changes in overall emissions are estimated and the potential for fuel savings identified. The efficiency of the system depends on the storage medium type, the availability of energy and the displacement characteristics of the examined vessels. These results for the global fleet indicate that savings depending on storage system, vessel condition and vessel type could be up to 0.32 million tonnes in NO x, 0.07 million tonnes in SO x and 4.1 million tonnes in CO 2. These represent a maximum 14% of reduction in dry bulk sector and 1.8% of world's fleet emissions. © 2011 Elsevier Ltd.

Research on wind energy applications in ocean shipping
Advanced Materials Research, volume 347-353, page 1017-1021, 2012
https://doi.org/10.4028/www.scientific.net/AMR.347-353.1017
Author: Wang, H.
Author: Sun, P.
Author: Shi, C.
Due to the world's energy shortage and increasing pressure on marine environmental protection, using solar and wind energy in ocean-going ships to reduce fuel consumption has become an international focus. At first this paper tests and analyzes aerodynamic characteristics of wing, and then ship model oblique towing test is conducted under different typical working conditions. Finally, the thesis analyzes the stability of ships which are equipped with additional wings in three different ocean-going cargo ships and provides security analysis basis for using sail-assist technology in ocean-going cargo vessels. © (2012) Trans Tech Publications, Switzerland.

Low carbon ships and shipping
Energy, Transport, & the Environment: Addressing the Sustainable Mobility Paradigm, page 539-560, 2012
https://doi.org/10.1007/978-1-4471-2717-8_30
Author: Smith, T.W.P.
This chapter discusses the scope for increasing the energy efficiency and decreasing the carbon (and other GHG) emissions of ships and shipping. An overview of the fundamentals of the shipping industry is presented (why does shipping exist, how does demand develop, where do ships go, how is shipping structured, what are its impacts) to provide context for further detail on the energy efficiency, regulatory options and technology options that could be employed to help transition shipping to a low carbon future. Two specific examples of trends which could be important to this transition (an increase in ship size and a decrease in speed) are then analysed in greater detail to reveal their potential and also some of the practical implementation issues that will need to be considered.

Energy efficiency parametric design tool in the framework of holistic ship design optimization
Proceedings of the Institution of Mechanical Engineers Part M: Journal of Engineering for the Maritime Environment, volume 225, issue 3, page 242-260, 2011
https://doi.org/10.1177/1475090211409997
Author: Boulougouris, E.K.
Author: Papanikolaou, A.D.
Author: Pavlou, A.
Recent International Maritime Organization (IMO) decisions with respect to measures to reduce the emissions from maritime greenhouse gases (GHGs) suggest that the collaboration of all major stakeholders of shipbuilding and ship operations is required to address this complex techno-economical and highly political problem efficiently. This calls eventually for the development of proper design, operational knowledge, and assessment tools for the energy-efficient design and operation of ships, as suggested by the Second IMO GHG Study (2009). This type of coordination of the efforts of many maritime stakeholders, with often conflicting professional interests but ultimately commonly aiming at optimal ship design and operation solutions, has been addressed within a methodology developed in the EU-funded Logistics-Based (LOGBASED) Design Project (2004-2007). Based on the knowledge base developed within this project, a new parametric design software tool (PDT) has been developed by the National Technical University of Athens, Ship Design Laboratory (NTUA-SDL), for implementing an energy efficiency design and management procedure. The PDT is an integral part of an earlier developed holistic ship design optimization approach by NTUA-SDL that addresses the multi-objective ship design optimization problem. It provides Pareto-optimum solutions and a complete mapping of the design space in a comprehensive way for the final assessment and decision by all the involved stakeholders. The application of the tool to the design of a large oil tanker and alternatively to container ships is elaborated in the presented paper.

The Northern Sea Route versus the Suez Canal: cases from bulk shipping
Journal of Transport Geography, volume 19, issue 4, page 977-983, 2011
https://doi.org/10.1016/j.jtrangeo.2011.03.003
Author: Schøyen, H.
Author: Bråthen, S.
The navigation distance via the Northern Sea Route (NSR) from a Northwest-European port to the Far East is approximately 40% shorter compared to the route via the Suez Canal. The shorter distance may facilitate more than a doubling of vessels' operational energy efficiency performance. There is at present substantial uncertainty in schedule reliability via the NSR. Unless the schedule reliability is improved, the NSR should primarily be explored for bulk rather than for liner shipping. A major disadvantage with the NSR is its seasonality. Shipping operations in the summer time via the NSR may already today be profitable for minor bulk trades. Additional shipping routes may give more flexibility, and the NSR route choice option may facilitate supply chain agility and adaptability.

Impacts of the Energy Efficiency Design Index on future designs of fast RoRo and RoPax vessels
11th International Conference on Fast Sea Transportation, FAST 2011 - Proceedings, page 742-746, 2011
Author: Pundt, L.
Author: Krüger, S.
The Energy Efficiency Design Index is a new regulation which is being developed by the International Maritime Organization to reduce carbon dioxide emissions from ships. This Paper highlights various problems, which are expected to occur with the introduction of the index. Especially fast RoRo and RoPax vessels for coastal transportation are subject to those restrictions and might therefore have enormous problems to achieve the required index. The reduction of the ship speed seems to be the only possible way to reduce the attained EEDI in such a way to be able to fulfill the new guideline for fast ships. For a standard 200m Ferry only a speed not higher than about 22 knots will be allowed. Based on various examples, the application of the EEDI for fast RoRo and RoPax vessels is explained and the expected problems are described. In addition, the impact of the index on the design process itself will be shown and new design concepts are presented. Furthermore, this thesis will give some recommendations how to optimize a ship for minimizing the EEDI while maximizing design speed of the vessel.

Author: Dotson,Jennifer
Author: Bowen,Rebecca
Upstate Transportation Forum 2011: Report from the Ithaca Carshare and Multimodal Transportation Conference, September 22-23, 2011, Downtown Ithaca, New York
2012/04, Final Report, 50p
Ithaca and Tompkins County, New York, have several innovative services and programs that extend access to transportation and also reduce environmental impacts, particularly greenhouse gas emissions. A hands on conference, the Upstate Transportation Forum 2011, was held to explore replication of these and similar programs in other upstate New York localities to further New York State's transportation and energy efficiency and greenhouse gas reduction goals. In addition, a post event survey of the over 100 attendees provided guidance for future similar events, indicating strong interest in, and impact of, continuing a system wide approach to transportation issues.
https://www.dot.ny.gov/divisions/engineering/technical-services/trans-r-and-d-repository/C-10-16_Final%20Report%20Upstate%20Transportation%20Forum.pdf

Author: Eudy,Leslie
Author: Burgess,Robert
Author: Ainscough,Chris
Author: Lewis,John
Transit Investments for Greenhouse Gas and Energy Reduction Program: First Assessment Report
2012/07 ,FTA Report No. 0016, 148p
The purpose of this report is to provide an overview and preliminary analysis of the U.S. Department of Transportation, Federal Transit Administration's Transit Investments for Greenhouse Gas and Energy Reduction (TIGGER) Program. TIGGER provides capital funds to transit agencies for projects that would reduce the agency's energy use and/or greenhouse gas (GHG) emissions. The report outlines the program history, goals, and technologies being implemented. It also provides a preliminary analysis of potential energy and GHG savings estimates. The report provides a description and current status of each project awarded in the program. (TIGGER)
http://www.fta.dot.gov/documents/FTA_Report_No._0016.pdf

TR News, Transportation Research Board
Author: Cotton,Keith
Author: Johnston,Kathy
Author: Leotta,Kathy
Author: Stark,Seth
Washington State's Commute Trip Reduction Program: Reducing Emissions and Growing the Economy by Managing Transportation Demand
2012/07, issue 281, pp 28-33
Washington State's Commute Trip Reduction program has built a foundation of partnerships for managing transportation demand, has improved transportation system performance, and has benefited the economy, the environment, and communities by reducing air pollutants, greenhouse gas emissions, and fuel consumption. This article presents key lessons learned from this program and concludes with an outline of research needs and comments on the program's method of leveraging resources by fostering partnerships that link economic development and transportation efficiency.
http://www.trb.org/Publications/Blurbs/167726.aspx

Author: Roth,M
Author: Graves,G
Eco-driving: can driving behaviour affect the traffic merry-go-round
2012/10, 12p
Eco-driving is a way of driving that reduces fuel consumption, greenhouse gas emissions and accident rates. Eco-driving offers benefits to drivers including ongoing reduction in transport emissions, road crashes and motoring costs. Mass uptake of eco-driving may achieve these benefits immediately, with no cost or reduction in mobility for the individual. Eco-driving incorporates both driver behaviour and mode share changes to reduce fuel emissions and kilometres travelled. The EcoDrive research project commenced in February 2011 and is funded jointly by the RACQ and the Queensland Government, with a peer review by the QUT Centre for Accident Research and Road Safety Queensland. The research was conducted over 18 months to July 2012 with 1,426 participants. It sought to understand which, if any, strategies were effective in supporting long term driving related behaviour change to increase fuel efficiency. The research used an experimental approach to examine the efficacy of five different treatment options including: on-line learning; classrooms; driving lessons; classrooms plus driving lessons; and half day workshops incorporating monitored pre and post drives. The research examined how these different options affect the behaviour of drivers in all age cohorts and in urban and regional settings. The RACQ EcoDrive Research Study findings are that changes to driving behaviour will occur with training. The combined effect of all the eco-drive training across the whole sample was a statistically significant 4.6 per cent reduction in fuel-use. This equates to an average reduction of 0.51 litres per 100km. This paper reports on the research and discusses the implications in public policy making. It provides a perspective on how we get the best out of our transport systems by influencing driver behaviour.
Conference: Australian Institute of Traffic Planning and Management (AITPM) National Conference, 2012, Sydney, New South Wales

Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit, Sage Publications Limited
Author: Hoffrichter,Andreas
Author: Silmon,Joseph
Author: Iwnicki,Simon
Author: Hillmansen,Stuart
Author: Roberts,Clive
Rail freight in 2035 - traction energy analysis for high-performance freight trains
2012/11, volume 226, issue 6, pp 568-574
This paper provides a comparison of the energy consumption and carbon emissions of rail and road vehicles for two routes. The scenarios considered are a high running speed container train, in locomotive hauled and electrical multiple unit (EMU) configuration, and a converted passenger EMU for pallets, as well as the corresponding road heavy goods vehicles. The container route is over the UK's East Coast Main Line and the pallet route is from London to the border with Scotland. The well-to-wheel 2008 and projected 2035 energy figures and carbon emissions are determined. It is demonstrated that, despite higher running speeds, a modal shift to rail reduces carbon emissions. The higher speed results in a more flexible path allocation for freight trains, enabling more attractive and flexible offers to shippers, therefore encouraging modal shift. The particular advantage of rail in hauling large volumes of cargo is highlighted, particularly if locomotives are used for traction.
http://dx.doi.org/10.1177/0954409712441753
http://pif.sagepub.com/cgi/content/abstract/226/6/568

Integrated Framework to Capture the Interdependence Between Transportation and Energy Sectors Due to Policy Decisions
This study intends to build upon previous work in the field of general equilibrium by developing an analytical framework that integrates the transportation and energy sectors in terms of their interdependencies, and policy instruments, to provide a quantitative tool that can analyze the long-term effects of different types of transportation policies (such as pricing, and various other demand-side or supply-side ones) on the energy sector. The tool will also aim to capture the qualitative evolution of transportation systems due to specific policy decisions related to energy usage or energy mandates (such as fuel efficiency rating of vehicles, and those related to blended fuels and alternative fuels, etc.).
http://www.purdue.edu/discoverypark/nextrans/research/research_in_progress.php

Author: Zhao,N
Author: Roberts,C
Author: Hillmansen,S
An approach for optimising railway traffic flow on high speed lines with differing signalling systems
ISSN: 9781845646165
2012/09, pp 27-37
This paper describes a study that uses a simulator to compare differences in energy consumption of trains and differences in trip time, using five different signalling systems in the simulation. It records the development of a multiple train simulator for this project. The signalling systems all operate on a common part of a high-speed rail line.
Conference: Thirteenth International Conference on Design and Operation in Railway Engineering (COMPRAIL 2012)Wessex Institute of TechnologyNew Forest,United Kingdom StartDate:20120911 EndDate:20120913 Sponsors:Wessex Institute of Technology

Author: Aarnink,S
Author: Faber,J
Author: den Boer,E
Market barriers to increased efficiency in the European on-road freight sector
2012/10, 101p
There are several technical and operational measures available to improve the fuel efficiency of truck fleets, but many of these measures are currently not universally implemented. Even cost-effective measures (i.e., measures which can be implemented with net fuel savings that outweigh the initial technology costs and potentially at a net profit) are often not adopted. The main barrier is the lack of information on the fuel savings of individual technical measures for trucks and especially on trailers. While many transport companies and all original equipment manufacturers (OEMs), are aware that certain technologies exist, few respondents believed that these technologies are cost-effective. As a result of this belief, the supply of fuel-saving technologies from OEMs is limited. This report aims to better understand the reasons for the limited adoption of cost-effective fuel-saving technologies and to inform the policy-making process in the European Union and abroad, and specifically to provide input to the European Commission’s strategy for reducing greenhouse gas emissions from heavy duty vehicles (HDVs). The primary goal of the study is to identify the barriers to the implementation of technologies that improve fuel efficiency in the European road freight transport sector. For this report, the existence and importance of barriers were analyzed through surveys and interviews of transport companies, OEMs, shippers, and logistics service providers.
http://www.cedelft.eu/publicatie/market_barriers_to_increased_efficiency_in_the_european_on-road_freight_sector/1307

Transportation Research Part D: Transport and Environment, Elsevier
Author: Mensing,Felicitas
Author: Bideaux,Eric
Author: Trigui,Rochdi
Author: Tattegrain,Helene
Trajectory optimization for eco-driving taking into account traffic constraints
2013/01, volume 18, pp 55-61
In this work potential gains in fuel consumption due to eco-driving will be discussed. A vehicle model and numerical optimization methods are used to identify optimal vehicle operation. To advice the driver of the realistically optimal velocity trajectory for a given trip, road and traffic constraints have to be taken into account. Most prior work on eco-driving do not consider traffic constraints. In this study, however, the chosen optimization method allows us to integrate traffic constraints in the form of a vehicle following situation. Three different factors specifying safe vehicle following are introduced and their influence on fuel consumption is discussed. With the results the gains of eco-driving are identified, while comparing a traffic-restricted situation with the overall optimal, non-constrained, vehicle operation.
http://dx.doi.org/10.1016/j.trd.2012.10.003
http://www.sciencedirect.com/science/article/pii/S1361920912001137

Transportation Research Record: Journal of the Transportation Research Board, Transportation Research Board
Author: Sears,Justine
Author: Glitman,Karen
Author: Fanslow,Greg
Measure for Measure: Energy Utility Model for Standardized Evaluation of Transportation Efficiency Measures
ISSN: 9780309286916
2013, issue 2375, pp 1-7
As the environmental and financial costs of conventional gasoline become more apparent, interest in the concept of transportation efficiency is growing. Broadly, this concept involves using less energy to meet current travel demand and often uses a systems-level approach. The transportation sector has much to learn from the electric and thermal energy sectors, whose demand management strategies have used established screening tools to assess the environmental and financial benefits of efficiency measures for years. The adoption of such screening tools may be ideal for the transportation sector as electric vehicles (EVs) bring these two sectors together. An example discusses how the Vermont state screening tool can be used to evaluate a transportation measure: switching from a conventional vehicle to an EV. Screening tool results demonstrate that the estimated cost benefits of an EV vary from -$15,911 to $24,645, depending on the EV model, miles driven annually, and externalities considered, among other factors. The cost-effectiveness of EVs was improved by including avoided health costs because of reduced tailpipe emissions. More broadly, results showed that cost-effectiveness screening tools used in the electric and thermal energy sectors provided a meaningful way to assess potential gains in transportation efficiency and could be used to evaluate other transportation efficiency measures (e.g., bicycle and walking infrastructure, transit). The use of such screening tools will increase communication and collaboration between the energy and transportation sectors while facilitating a systems-based approach to transportation planning and demand management.
http://dx.doi.org/10.3141/2375-01
http://scholar.google.com/scholar_lookup?title=Measure+for+Measure%3a+Energy+Utility+Model+for+Standardized+Evaluation+of+Transportation+Efficiency+Measures&author=J.+Sears&author=K.+Glitman&author=G.+Fanslow&publication_year=2013

Author: Stevanovic,Aleksandar
Author: Zlatkovic,Milan
Evaluation of InSync Adaptive Traffic Signal Control in Microsimulation Environment
2013, 21p
InSync, an ATCS developed and supported by Rhythm Engineering, is one of the youngest ATCSs on the market. Yet, dozens of InSync systems were recently deployed around the country. InSync has been evaluated in microsimulation before. However, previous attempts lacked: a rigor of scientific approach, effort to carefully build a field-like microsimulation model, and analysis that investigates a comprehensive set of performance measures including environmental and safety metrics. This study addresses these issues by evaluating performance of InSync on segment of SR 421 - a 12-intersection corridor in Volusia County, FL. InSync adaptive traffic control logic has been compared to three conventional Time-Of-Day signal timings plans in a virtual reality of microsimulation model. VISSIM model of SR 421 was carefully calibrated and validated to resemble field conditions as much as possible. Each of scenarios was simulated multiple times and results were tested for statistical significance. Findings show that InSync outperforms TOD signal timings in terms of traffic efficiency. Savings vary between 2-20% depending on a particular performance measure and time of the day. In terms of environmental factors and surrogate safety measures InSync also outperforms TOD signal timings but sometimes it pays the price of enabling more efficient traffic operations than the TOD plans. Further research is necessary to investigate InSync benefits in the environment of volatile changes in traffic flows.
Conference: Transportation Research Board 92nd Annual MeetingTransportation Research BoardWashington,DC,United States

Author: Eisele,William,L
Author: Schrank,David,L
Author: Schuman,Rick
Author: Lomax,Timothy,J
Estimating Urban Freight Congestion Costs: Methodologies, Measures, and Applications
2013, 21p
Congestion is a significant problem in America's 439 urban areas. According to the Texas A&M Transportation Institute's 2011 Urban Mobility Report (UMR), congestion caused urban Americans to travel 4.8 billion hours more and to purchase an extra 1.9 billion gallons of fuel for a congestion cost of $101 billion. The UMR informs decision-making at the federal, state, and local levels. In 2011, the Texas A&M Transportation Institute released the inaugural Congested Corridors Report, which produces congestion statistics for the 328 most congested directional corridors in the United States. With the documented growth in freight shipments, particularly in the trucking sector, researchers were interested in developing methodologies and measures to help inform policy-makers and decision-makers characterize the impacts of congestion on urban areas. These methodologies and measures were developed and incorporated into the UMR and CCR. The methodologies use inventory data from the Federal Highway Administration's (FHWA's) Highway Performance Monitoring System (HPMS) and historical speed data from INRIX® to estimate wasted time (delay in person-hours) and diesel fuel (gallons wasted), as well as the associated costs for trucks in urban congestion. The results and rankings appear intuitive, and this information provides an important dimension to these reports for characterizing congestion levels in urban areas and along congested corridors in America. This information will help to inform trucking stakeholders by quantifying the congestion impact to the trucking community. Researchers will continue to include truck delay, wasted fuel, and associated costs for urban area trucks in future releases of the UMR and CCR.
Conference: Transportation Research Board 92nd Annual MeetingTransportation Research BoardWashington,DC,United States
http://docs.trb.org/prp/13-1344.pdf

Author: Sharma,Sushant
Author: Mishra,Sabyasachee
Study of Effect on GHG Emissions by Addition of Transit Mode in Existing Road Network and Optimal Emission Pricing Models for Reducing Carbon Footprint
2013, 2p
Scientists and policymakers intend worldwide emissions reduction of up to 80 percent of carbon dioxide (CO2) and other greenhouse gases (GHGs) in the next four decades to stabilize atmospheric concentrations (1). Henceforth, an immediate response from the transportation sector, one of the largest producers of GHGs (up to 30 percent in the U.S.), is critical for GHGs reduction. Possible long-term solutions towards cutting back on emissions from transportation are increasing supply-of/demand-for more energy efficient/fuel efficient vehicles and to substantially improve the transit system (high-speed rail, passenger rail, metro), to reduce reliance on private vehicles and air travel for short trips. However, the markets are still struggling to produce supply-of/demand-for energy efficient vehicles and public debate on potential ridership of high speed rail is ongoing in the U.S. Another feasible strategy that can prove to be effective is emission pricing . Recent advancement in Intelligent Transportation Systems (ITS) offers a technical solution to implement emission pricing effectively in a reasonable period of time. Further, this strategy can foster demand for efficient vehicles and high transit ridership while reducing GHGs emission and generating revenue. As state departments of transportation (DOTs) and metropolitan planning organizations (MPOs) struggle to find more options to reduce GHGs emission, emission pricing offers a solution. To consider emission pricing as an alternative, planners and policymakers will need tools to understand the implications on private vehicle users and the environment. Therefore, in this study, we propose models for understanding the reduction of GHGs emission and shifts of private vehicle trips to transit by implementing ITS based optimal emission pricing to reduce GHGs emission by a certain percentage in a composite transportation network (transit and highway network). The bi-level models presented in this study take into account the planner's policy decision and the road user's response to such policies in a simple and methodologically robust framework. The complex decision of choosing transit over private vehicle and road user behavior in the study has been studied by mode split functions and the classical user equilibrium principle. The performance of proposed models is compared to the base-case (do-nothing); reductions in total GHGs emission by optimal emission pricing shows efficacy of the models. The presented methodology in this paper is generalizable and can be applied to any transportation network.
Conference: Transportation Research Board 92nd Annual MeetingTransportation Research BoardWashington,DC,United States StartDate:20130113 EndDate:20130117 Sponsors:Transportation Research Board

Author: Lem,Lewison,Lee
Author: Chami,Rami
Author: Moylan,Emily

The Public Transportation and Land Use Multiplier: Greenhouse Gas Reduction Potential and Associated Costs in the Los Angeles Southern California Metropolitan Region

2013, 18p

Transit in high density urban regions can help reduce the vehicle miles traveled (VMT) by residents and visitors. Less private vehicle dependency and use reduces greenhouse gas (GHG) emissions and congestion. Planners and politicians can benefit significantly from improved information about transit's effects on land use and vehicle use. There are a number of techniques to estimate the influence that transit has on non-transit travel patterns in a given region. One method involves using the American Public Transportation Association's (APTA) approach to calculating land use multipliers. The APTA methodology can also be used to measure the GHG, VMT, and fuel use impacts of potential mode shift, congestion relief, and land use changes associated with transit service. Additionally, the APTA methodology can be used with the Department of Transportation's National Transit Database (NTD) to develop quick and cost-effective estimates of transit leverage for all transit agencies listed in the NTD. This advancement can be used by policy decision makers to estimate fuel use and greenhouse gas emissions reductions achievable through changes in transit supply policies. The paper will compare land use multipliers in different cities in the Los Angeles Southern California metropolitan region. The comparison will examine the influence of population, density, job clusters, and other factors on regional land use multipliers. This paper will discuss the scenarios, the analysis methodology used, and the ways in which these results differ from other recent literature on the topic.

Conference: Transportation Research Board 92nd Annual MeetingTransportation Research BoardWashington,DC,United States StartDate:20130113 EndDate:20130117 Sponsors:Transportation Research Board

Transportation Research Record: Journal of the Transportation Research Board, Transportation Research Board
Author: Protopapas,Annie
Author: Kruse,C,James
Author: Olson,Leslie,E
Modal Comparison of Domestic Freight Transportation Effects on the General Public
ISSN: 9780309263313
2013, issue 2330, pp 55-62
Data from 2001 to 2009 were used to update the 2009 modal comparison study conducted by the Texas Transportation Institute, which used data from 2001 to 2005. The objective was to develop performance measures of rates per ton-mile to facilitate multimodal comparisons between inland towing, rail, and truck in six topical areas: cargo capacity, traffic congestion, energy efficiency, air quality, safety, and infrastructure. The study focused on several vital issues from a snapshot in time. Credible publicly available and independently verifiable data from federal, industry, and academic sources were used. The scope of the study and several data limitations necessitated the use of assumptions that were based on sound engineering principles, as well as development of innovative methods, to arrive at plausible results and fulfill the study's unconventional objectives. The study results showed that waterborne transportation continued to compare favorably with rail and highway modes for the examined performance measures. Any waterborne freight diversion to either of the two modes likely would result in serious negative effects on freight transportation operations and in possible system breakdowns. Chain reaction effects would jeopardize the well-being of the general public and the national economy.
http://dx.doi.org/10.3141/2330-08
http://scholar.google.com/scholar_lookup?title=Modal+Comparison+of+Domestic+Freight+Transportation+Effects+on+the+General+Public&author=A.+Protopapas&author=C.+Kruse&author=L.+Olson&publication_year=2013

Author: Sun,Jian
Author: Niu,Dening
Author: Chen,Shenyang
Author: Li,Keping
Development and Investigation of a Dynamic Eco-Driving Speed Guidance Strategy for Signalized Highway Traffic
2013, 23p
During driving on the signalized highway corridors, the signal timing and vehicle positioning information can be provided under connected-vehicle environment. This paper developed a dynamic eco-driving speed guidance strategy (DESGS) which yields the most fuel/emission-optimal speed profile for a vehicle approaching signalized intersections. An optimization-based rolling horizon and a dynamic programming approach for tracking the optimal guided velocity for individual vehicle are put forward, and also a vehicle specific power based approach to estimate fuel consumption and CO2 emissions was integrated in the DESGS. To evaluate the effectiveness of the overall strategy, 15 typical drivers were recruited to attend the speed guidance experiments using multi-vehicle driving simulators. It was found that the number of stops is significantly reduced and fuel consumption and CO2 emissions can be reduced by 25% for the vehicles with eco-speed guidance as compared to the vehicles without speed guidance.
Conference: Transportation Research Board 92nd Annual MeetingTransportation Research BoardWashington,DC,United States StartDate:20130113 EndDate:20130117 Sponsors:Transportation Research Board

Author: Ehrler,Verena,Charlotte
Author: Davydenko,Igor,Y
Author: de Ree,Diederik
Author: Ton,Jaurieke
Author: Auvinen,Heidi
Author: Lewis,Alan
Author: Seidel,Saskia
Author: Lischke,Andreas
Author: Maurer,Hedi

Standardized Emission Calculations Along Supply Chains as Basis for Smart Global Transport Solutions in a "Reality of Less": Is an Approach Within Reach?

2013, 19p

In the internationalized world of commerce, global supply chains are a fundamental element and in a "Reality of Less" the maximization of efficiency and effectiveness of these supply chains is of fundamental importance. This maximization of efficiency and effectiveness of supply chains though requires transparency of energy consumption and of emissions, because resources such as fuel and clean air are getting less available. A global standardization for the calculation of emissions would contribute to such a transparency as it allows comparison of the efficiency and effectiveness with regard to supply chains' energy consumption. Currently, however, such a standard does not exist and a wide range of different methodologies and tools are applied by the various players: different databases are used, various calculation tools apply different indicators and they are generally not compatible with each other. As a consequence results obtained are incomparable at all levels: at the level of shippers as well as at the level of transport modes, of shipments, carriers or products. Comparisons between different supply chains, or elements within them, are not feasible and also trends over time or implications of changes to chains cannot be established. A global applicable standard - similar to the International Financial Reporting Standards - still needs to be developed and implemented internationally. This research describes, based on the COFRET project which is part-funded by the EU, how currently on-going work and efforts worldwide can lead to a further convergence of existing emission calculation tools, as a basis for better supply chains.

Conference: Transportation Research Board 92nd Annual MeetingTransportation Research BoardWashington,DC,United States StartDate:20130113 EndDate:20130117 Sponsors:Transportation Research Board

Transportation Research Record: Journal of the Transportation Research Board, Transportation Research Board
Author: Filho,Paulo,Kemper
Author: Suh,In-Soo
Implementation Cost Comparison of Electric Vehicle Energy Replenishment Technologies for Public Transit Bus Systems
ISSN: 9780309294898
2013, issue 2352, pp 11-19
Several technologies have been developed for optimizing the use of electric vehicles, especially with regard to replenishment of the energy supply. A novel model with which to compare the implementation cost of various replenishment technologies is proposed. Petri nets were used to calculate the minimum amount of resources required to implement each of the solutions given a specific headway. Three case studies are presented, the results of which led to the conclusion that on shorter headways, battery swap systems are preferred, followed by in-motion grid-provided systems, and that on longer headways, battery recharge systems are preferred for total implementation cost. The in-motion grid-provided systems showed a lower overall operation cost over the headway range; this result indicates a potentially lower overall implementation cost if the complete life-cycle cost is taken into account.
http://dx.doi.org/10.3141/2352-02
http://scholar.google.com/scholar_lookup?title=Implementation+Cost+Comparison+of+Electric+Vehicle+Energy+Replenishment+Technologies+for+Public+Transit+Bus+Systems&author=P.+Filho&author=I.+Suh&publication_year=2013

Transportation Research Record: Journal of the Transportation Research Board, Transportation Research Board
Author: Vimmerstedt,Laura
Author: Brown,Austin
Author: Heath,Garvin
Author: Mai,Trieu
Author: Melaina,Marc
Author: Newes,Emily
Author: Ruth,Mark
Author: Simpkins,Travis
Author: Warner,Ethan
Author: Bertram,Kenneth
Author: Plotkin,Steven
Author: Patel,Deena
Author: Stephens,Thomas
Author: Vyas,Anant
Potential Reductions in Emissions and Petroleum Use in Transportation: Perspectives from the Transportation Energy Futures Project
ISSN: 9780309286916
2013, issue 2375, pp 37-44
The use of energy-efficient technologies and renewable energy sources in transportation could reduce petroleum use and greenhouse gas emissions, but these approaches may face challenges in consumer adoption, infrastructure requirements, and resource constraints. The Transportation Energy Futures project of the U.S. Department of Energy reviewed opportunities for significant reductions in petroleum use and greenhouse gas emissions. On the basis of that review, a diverse set of strategies is explored: reduced energy intensity of transportation modes, lower use intensity of motorized transport, and reduced carbon or petroleum intensity through the use of electricity and hydrogen from renewable energy as well as the use of biofuels. Energy efficiency and demand-side approaches could stop the growth in total transportation energy. In the light-duty vehicle sector, growth in energy use already is projected to flatten; the deployment of technologies for energy efficiency could limit growth in the non-light-duty sector. Travel reduction and built environment changes could moderate personal transportation demand. Freight mass reductions and mode switching could slow or stabilize freight demand. Vehicles using electricity or hydrogen could enable access to renewable energy resources other than biomass. Challenges in fueling infrastructure expansion and market uptake of advanced vehicles are considered. Competition for biomass also is explored, considering markets for electricity, gasoline, diesel, jet fuel, and bunker fuel. The potential for the implementation of these strategies to displace U.S. petroleum use and reduce greenhouse gas emissions in the transportation sector is discussed along with the barriers to realizing this potential in the market.
http://dx.doi.org/10.3141/2375-05
http://scholar.google.com/scholar_lookup?title=Potential+Reductions+in+Emissions+and+Petroleum+Use+in+Transportation%3a+Perspectives+from+the+Transportation+Energy+Futures+Project&author=L.+Vimmerstedt&author=A.+Brown&author=G.+Heath&author=T.+Mai&author=M.+Melaina&author=E.+Newes&author=M.+Ruth&author=T.+Simpkins&author=E.+Warner&author=K.+Bertram&author=S.+Plotkin&author=D.+Patel&author=T.+Stephens&author=A.+Vyas&publication_year=2013

Transportation Research Part C: Emerging Technologies, Elsevier
Author: Psaraftis,Harilaos,N
Author: Kontovas,Christos,A
Speed models for energy-efficient maritime transportation: A taxonomy and survey
2013/01, volume 26, pp 331-351
International shipping accounts for 2.7% of worldwide CO2 emissions, and measures to curb future emissions growth are sought with a high sense of urgency. With the increased quest for greener shipping, reducing the speed of ships has obtained an increased role as one of the measures to be applied toward that end. Already speed has been important for economic reasons, as it is a key determinant of fuel cost, a significant component of the operating cost of ships. Moreover, speed is an important parameter of the overall logistical operation of a shipping company and of the overall supply chain and may directly or indirectly impact fleet size, ship size, cargo inventory costs and shippers' balance sheets. Changes in ship speed may also induce modal shifts, if cargo can choose other modes because they are faster. However, as emissions are directly proportional to fuel consumed, speed is also very much connected with the environmental dimension of shipping. So when shipping markets are in a depressed state and "slow-steaming" is the prevalent practice for economic reasons, an important side benefit is reduced emissions. In fact there are many indications that this practice, very much applied these days, will be the norm in the future. This paper presents a survey of speed models in maritime transportation, that is, models in which speed is one of the decision variables. A taxonomy of such models is also presented, according to a set of parameters.
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http://www.sciencedirect.com/science/article/pii/S0968090X12001246

Author: Ban,Xuegang,Jeff
Author: Sun,Zhanbo
Simulation-based Decision-making Tool for Adaptive Traffic Signal Control on Tarrytown Road in the City of White Plains
2013/01, Final Report, 80p
Transportation corridors are vital for our region and even the nation's economy and quality of life. A corridor is usually a complicated system that may span multi-jurisdictions, contains multiple modes, include both freeways and local arterials, and be equipped with numerous traffic control and information systems. Managing such a complicated system requires care as performance improvement (such as reduced congestion) at one location of a corridor may cause performance degradation at other locations and as a whole a reduced corridor performance. This research develops a simulation-based corridor decision making tool that can evaluate alternative corridor scenarios based on corridor level mobility, fuel consumption, and emissions. Using the Tarrytown Road in the City of White Plains New York as a case study, this project presents (1) how a simulation-based decision-making tool can be developed and (2) how such a tool can be used to evaluate various corridor-wide traffic or improvement scenarios. The development of the simulation tool mainly includes the analysis of corridor data needs and collection, simulation network coding and API development, capacity calibration, origin-destination (OD) demand estimation, and simulation model calibration and validation. The scenario evaluation includes (1) the development of the scenarios which usually requires a close collaboration with the local agencies so that the evaluated scenarios are useful to their operations and management regarding the corridor; and (2) evaluations of the scenarios and results representation, which may be done based on one or multiple criteria related to corridor mobility, fuel consumption and emissions. The developed simulation-based tool and the scenario evaluation results revealed some important characteristics of the study corridor, based on which recommendations were provided on how the corridor might be better operated and managed under various scenarios. The results of this research further show that the proposed simulation-based decision-making tool can provide a comprehensive assessment framework for various corridor scenarios and may be used for "what-if" types of analyses for the corridor. This enables more informed decisions by the decision-makers about resource allocations and the selection of the best corridor improvement strategies.
https://www.dot.ny.gov/divisions/engineering/technical-services/trans-r-and-d-repository/C-10-03%20Final%20Report.pdf

Research in Transportation Economics, Elsevier
Author: Reis,Vasco
Author: Meier,J,Fabien
Author: Pace,Giuseppe
Author: Palacin,Roberto
Rail and multi-modal transport
2013/05, volume 41, issue 1, pp 17-30
This paper elaborates on the definitions of inter and multi-modal transport, as well as their differences in terms of performance. A survey of the barriers, both internal and external, to an efficient intermodal transport is included followed by an analysis of the advantages and disadvantages of combining rail transport with the other transport modes. Transhipment technologies for efficient freight service and some examples of freight rail corridors between sea and inland terminals are presented. The integration between air and rail transport is discussed and the potential synergies between air and high-speed rail services are emphasised. The paper concludes with a discussion on energy use for sustainable rail performance.
http://dx.doi.org/10.1016/j.retrec.2012.10.005
http://www.sciencedirect.com/science/article/pii/S073988591200159X

Marine Technology Society Journal, Marine Technology Society
Author: Ballou,Philip,J
Ship energy efficiency management requires a Total Solution approach
2013/01, volume 47, issue 1, pp 83-95
Ship and fleet operating efficiencies are multifaceted and interdependent. As such, efficiency management must involve an integrated solution that extends across the entire operation of the fleet. No single metric can be used to indicate success or failure of improving overall efficiency. Rather, a comparative analysis of multiple metrics is required. Furthermore, to be viable, efficiency management must accommodate operating priorities, goals, and constraints. Technology to save fuel and reduce carbon footprint is only useful if critical mission objectives are also met. Most ships can reduce fuel consumption simply by slowing down, albeit at the expense of increased passage duration. Tactical objectives that require fast transit times or reliable just-in-time arrival may justify the associated increase in fuel consumption. Ship operators fulfilling those objectives must look for ways other than slow steaming to improve energy efficiency, including, for example, deployment optimization, smart voyage planning, and onboard energy management. Other key metrics associated with operating efficiency include health and safety of crew and cargo, ship life cycle costs, and unscheduled time in port. Through strategic application of multiple efficiency management tools, these costs may be maintained or reduced while supporting the operational objectives and constraints of ship, fleet, and operator. All of these aspects of ship and fleet operating efficiency may be quantitatively compared to previous baselines using objective benchmarking methodologies.
http://dx.doi.org/10.4031/MTSJ.47.1.5
http://www.ingentaconnect.com/content/mts/mtsj/2013/00000047/00000001/art00008

Transportation Energy Futures Series, Department of Energy
Author: Grenzeback,Lance,R
Author: Brown,Austin
Author: Fischer,Michael,J
Author: Hutson,Nathan
Author: Lamm,Christopher,R
Author: Pei,Yi,Lin
Author: Vimmerstedt,Laura
Author: Vyas,Anant,D
Author: Winebrake,James,J

Freight Transportation Demand: Energy-Efficient Scenarios for a Low-Carbon Future

2013/03, 96p

Freight transportation demand is projected to grow to 27.5 billion tons in 2040, and by extrapolation, to nearly 30.2 billion tons in 2050, requiring ever-greater amounts of energy. This report describes the current and future demand for freight transportation in terms of tons and ton-miles of commodities moved by truck, rail, water, pipeline, and air freight carriers. It outlines the economic, logistics, transportation, and policy and regulatory factors that shape freight demand; the possible trends and 2050 outlook for these factors, and their anticipated effect on freight demand and related energy use. The report draws upon a variety of sources, including published literature and unpublished perspectives based on authors' expertise. After describing federal policy actions that could influence freight demand, the report then summarizes the available analytical models for forecasting freight demand, and identifies possible areas for future action. This is not intended to propose or promote particular policy actions. The U.S. Department of Transportation (U.S. DOT) Federal Highway Administration (FHWA) Freight Analysis Framework (FAF) estimates that 18.3 billion tons of goods were moved in the United States in 2007, generating 5.4 trillion ton-miles of travel (U.S. DOT FHWA Undated). Trucks moved about 72% of all freight tonnage, accounting for 42% of all ton-miles. Rail accounted for 11% of tons moved, but 28% of ton-miles. Domestic waterborne and air freight transportation shares were considerably smaller.1 While all modes of domestic freight transportation are expected to experience significant growth in the coming decades, trucking's share - when measured in tons and ton-miles - is projected to continue to grow at the expense of rail and waterborne freight. This reflects changes in the U.S. economy that are anticipated to favor the production and shipment of higher-value-added and time-sensitive goods, as well as an established preference among many freight shippers for using trucks to move such goods. Even as freight needs grow, more accurate demand forecasting, paired with effective policymaking, can help minimize this sector's energy consumption and emissions. As shown in Table ES.1, increasing heavy-duty engine efficiency and emission standards and imposing low-carbon fuel standards were identified as the policy options with the greatest probability of implementation and the highest potential for energy use and greenhouse gas (GHG) emissions reduction. The assessments are based on available data, historic trends, and the authors' professional insights on this industry.

http://www.nrel.gov/docs/fy13osti/55641.pdf

Transportation Energy Futures Series, Department of Energy
Author: Porter,Christopher,D
Author: Brown,Austin
Author: DeFlorio,Josh
Author: McKenzie,Elaine
Author: Tao,Wendy
Author: Vimmerstedt,Laura
Effects of Travel Reduction and Efficient Driving on Transportation: Energy Use and Greenhouse Gas Emissions
2013/03, 113p
Numerous transportation strategies are directed at reducing energy use and greenhouse gas (GHG) emissions by changing the behavior of individual drivers or travelers. These behavioral changes may have the effect of reducing travel, shifting travel to more efficient modes, or improving the efficiency of existing travel. This report reviews and summarizes the literature on relationships between these strategies and transportation-related energy use and greenhouse gas (GHG) emissions. The primary objectives of this report are to examine how changes to travel behavior can reduce transportation energy use and discuss the potential for federal actions to affect travel behavior. Since the 1970s, federal, regional, state and municipal agencies have tried to reduce energy use, emissions, and congestion by influencing travel behavior. This report summarizes historical findings documented in existing literature, as well as recent efforts that had not previously been reported, and highlights and interprets that literature for information most relevant to an energy perspective. Opportunities for federal action to encourage travel reduction and efficient driving as a way to reduce energy use are summarized.
http://www.nrel.gov/docs/fy13osti/55635.pdf

Transportation Research Part D: Transport and Environment, Elsevier
Author: Sun,Xing
Author: Yan,Xinping
Author: Wu,Bing
Author: Song,Xin
Analysis of the operational energy efficiency for inland river ships
2013/07, volume 22, pp 34-39
This paper looks at the energy consumption and green house gas emissions of inland river shipping, and compares them with the performance of seagoing ships. The analysis is based on a case study of container shipping on the Yangtze River, China. Data were collected under both calm water and real navigation conditions, and energy efficiency operation indices under these conditions are calculated and analyzed. The authors find that the navigation environment can influence significantly the operational energy efficiency of inland river ships.
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http://www.sciencedirect.com/science/article/pii/S1361920913000448

Maritime Economics & Logistics, Palgrave Macmillan
Author: Maloni,Michael
Author: Paul,Jomon,Aliyas
Author: Gligor,David,M
Slow Steaming Impacts on Ocean Carriers and Shippers
2013/06, volume 15, issue 2, pp 151-171
This article will discuss how ocean container carriers have implemented slow steaming (reduced vessel speeds) in recent years to improve fuel efficiency and lower greenhouse gas emissions. However, many shippers oppose the practice due to increased pipeline inventory associated with longer transit times. This article seeks to quantify the costs and benefits of slow steaming relative to carriers and shippers. The authors simulate a high volume Asia-North America container trade lane to estimate slow steaming impacts under different vessel speeds, volumes and fuel prices. Under current conditions, the results justify slow steaming practices, revealing extra slow steaming as the most beneficial vessel speed with a 20% reduction in total costs and a 43% reduction in carbon dioxide emissions. Extra slow steaming is also optimal for future volumes and a wide range of fuel prices. The results in this article detail carrier and shipper cost trade-offs, thus offering practical evidence and transparency to the industry on how to create financial equity in facilitating contractual-based agreements for vessel speed standards.
http://dx.doi.org/10.1057/mel.2013.2

Author: Foster,Ben
Author: Langer,Therese
Energy Efficiency Potential of the U.S. Freight System: A Scoping Exercise
2012/05, 28p
Freight transportation contributes substantially to energy use and the presence of greenhouse gases in the United States - 18% of oil consumption and 9% of carbon dioxide emissions, to be exact. It is forecast that carbon dioxide emissions from light vehicles will decrease by 0.9% per year, from 2011-2040; but greenhouse gas emissions from the exhaust gases of trucks will increase about 1.2% per year during the same time frame. It seems necessary to focus more on reducing freight transportation fuel consumption. This report addresses two questions: what have recent investigations determined to be the possibility of enhancing the energy efficiency of freight goods movement in the United States? Do these investigations consider all of the strategies that could substantially contribute to decreasing the utilization of energy by freight transportation?
http://www.aceee.org/sites/default/files/publications/researchreports/t132.pdf

Transportation Research Part C: Emerging Technologies, Elsevier
Author: Zegeye,S,K
Author: De Schutter,B
Author: Hellendoorn,J
Author: Breunesse,E,A
Author: Hegyi,A
Integrated macroscopic traffic flow, emission, and fuel consumption model for control purposes
2013/06, volume 31, pp 158-171
Traffic control approaches based on online optimization require fast and accurate integrated models for traffic flow, emission, and fuel consumption. In this context, one may want to integrate macroscopic traffic flow models with microscopic emission and fuel consumption models, which can result in shorter simulation times with fairly accurate estimates of the emissions and fuel consumption. In general, however, macroscopic traffic flow models and microscopic emission and fuel consumption models cannot be integrated with each other. This paper provides a general framework to integrate these two kinds of models. The authors illustrate the approach by considering the macroscopic traffic flow model METANET and the microscopic emission and fuel consumption model VT-micro resulting in the so called “VT-macro” model. Moreover, the authors characterize analytically the error introduced by the VT-macro model relative to the original VT-micro model and present an empirical analysis of the error and the computation time based on calibrated models of the Dutch A12 freeway.
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http://www.sciencedirect.com/science/article/pii/S0968090X13000041

PROMET-Traffic & Transportation, Sveuciliste U Zagrebu
Author: Nasibov,Efendi
Author: Eliiyi,Ugur
Author: Ozkilcik Ertac,Mefharet
Author: Kuvvetli,Umit
Deadhead Trip Minimization in City Bus Transportation: A Real Life Application
2013, volume 25, issue 2, pp 137-145
The quality of public transportation services is one of the most important performance indicators of modern urban policies for both planning and implementation aspects. Therefore, along with the size of the city, the significance of appropriate cost evaluation and optimization of all related transportation activities increases as well. One of the most important cost factors for the public transport agencies is naturally the fuel consumption of the vehicles. In this study, the attention is focused on the metropolitan bus transport service. The specific aim is to minimize a significant portion of total fuel utilization that occurs due to the so called deadhead trip or dead mileage, which is defined as the idle distance covered by the vehicle between the garage and the route terminal stops without carrying any passengers. In this study, the results of four mathematical models for minimizing the total deadhead trip distance covered in city bus services of Izmir are presented. The models vary due to the inclusion of garage capacity restrictions or operator distinction for supporting both operational and strategical decisions. All models are applied to the recent bus schedule data, which consist of 293 routes, 1,424 buses and 10 garages, for obtaining the optimal route bus-garage allocations and garage capacities. The results of the Decentralized-Capacitated model, which is appropriate for quick implementation, promise a 7.8% reduction in total dead mileage. While on the other hand, if all garage capacities can be expanded and the bus service is maintained only by one operator as modelled in the Centralized-Uncapacitated case, even a 31.4% improvement is possible in the long term. The environmental gains as well as the financial benefits to be achieved when the solutions are actually implemented, justify the practical contribution of the study.
http://dx.doi.org/10.7307/ptt.v25i2.1289
http://www.fpz.unizg.hr/traffic/index.php/PROMTT/article/view/1289

International Journal of Shipping and Transport Logistics, Inderscience Enterprises Limited
Author: Noshokaty,Said El
Shipping Optimisation Systems (SOS): Liner Optimisation Perspective
2013, volume 5, issue 3, pp 237-256
Most of the few papers which have been published on ‘optimization in liner shipping’ give a great deal of attention to allocating ships to shipping lines. Papers usually assume voyage gross profit to be constant, with restricting assumption on transport demand, ship speed, and port stay. To streamline these ideas, shipping optimization systems (SOS), a suite of decision support systems, is developed to optimize voyage gross profit, subject to deterministic or stochastic cargo demand. Sensitivity and what-if analysis are adopted, in case of any change is made to cargo quantity or freight, cargo handling rate or charges, and ship speed or fuel consumption. SOS uses the optimized voyage gross profit to optimally allocate fleet units to shipping lines. In a competitive environment with old ships, SOS optimally allocates new ships to lines in order to figure out their prospective gross profit, and appraise their worthiness.
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http://inderscience.metapress.com/link.asp?target=contribution&id=A40726372445873L

Author: Atkinson-Palombo,Carol
Author: Marshall,Wesley
Quantifying Transit-Oriented Development's Potential Contribution to Federal Policy Objectives on Transportation-Housing-Energy Interactions
2013/03 ,Final Report, 231p
This project involved a comprehensive and compact study of the built environment in light rail transit (LRT) station areas in Denver, Colorado and travel behaviors in both Transit-Oriented Development (TOD)- and non-TOD areas in the region. Graduate students from the University of Connecticut and University of Colorado, Denver participated in a workshop in Denver in Spring 2011 to collaborate on designing questions for two comprehensive travel surveys and subsequently carry out an intensive field campaign to collect data. The principal objectives were to provide insight into how different types of TOD affect travel behavior patterns-specifically reductions in vehicle miles traveled (VMT)- and to understand what prevents people from living in TOD areas. The latter information was intended to help assess the potential for region-wide reductions in VMT. An additional objective was to provide University of Connecticut students with experience in carrying out collaborative, integrative, and interdisciplinary research with students from a National Science Foundation (NSF) Integrative Graduate Education, Research and Training (IGERT) Program. The intention was to help to build a community of emerging scholars equipped to engage in trans-disciplinary work on policy-relevant issues, and help to better position faculty at the University of Connecticut to advance ongoing initiatives to establish an IGERT in Sustainable Urbanism. The main findings of the research are that although the LRT system in Denver, Colorado, may have met its goals with respect to congestion relief and ridership, the fact that the system has been located in existing travel corridors housing freeways and heavy freight trains limits the extent to which the system can become integrated into the fabric of the built environment. A thorough and systematic index of pedestrian level-of-service shows a tremendous variation in the pedestrian accessibility of stations across the system. In addition, stations that have park-and-ride lots show similar levels of vehicle ownership and VMT to other locations across the metropolitan area that are nowhere near LRT systems. Only those stations defined as walk-and-ride locations (i.e., those without park-and-ride lots) register lower car ownership and lower levels of VMT. The results of the research are in the process of being disseminated to academics, practitioners, and policymakers interested in the interactions between transportation, housing, and energy demand. To date, the research has resulted in one MA Thesis completed in May 2011, one MS Thesis due to be completed at the end of August 2013, one presentation at the Transportation Research Board January 2013 annual meeting, one presentation at the Annual Association of American Geographers' annual meeting in New York in March 2012, one paper in the Transportation Research Record, and one presentation at the Association of Collegiate Schools of Planning.
http://www.ctls.uconn.edu/pdf/10-01Final.pdf

Procedia - Social and Behavioral Sciences, Elsevier
Author: Hanssen,Thor-Erik,Sandberg
Author: Mathisen,Terje,Andreas
Author: Jørgensen,Finn
Generalized Transport Costs in Intermodal Freight Transport
2012/10/04, volume 54, pp 189-200
Intermodal transport solutions, implying non-road freight transport on the long-haul, can contribute to the advance of more energy efficient transportation systems. This paper presents a model for analyzing the generalized transport cost of an intermodal transport solution. The authors find that the required long-haul distance required to make intermodal transport preferable increases when (1) handling costs at terminals increases, (2) total transport distance increases, (3) pre- and posthaulage costs increase, (4) distance dependent marginal generalized costs for rail increases, (5) the distance dependent marginal generalized costs for truck decreases and (6) reduced resting costs for truck drivers. The model results are discussed in light of transport of fresh aquaculture products from Norway to Continental Europe.
Conference: 15th Meeting of the EURO Working Group on TransportationEuropean Working Group on Transportation (EWGT)Paris,France StartDate:20120910 EndDate:20120913 Sponsors:European Working Group on Transportation (EWGT)
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http://www.sciencedirect.com/science/article/pii/S1877042812042000

Procedia - Social and Behavioral Sciences, Elsevier
Author: Eliiyi,Ugur
Author: Nasibov,Efendi
Author: Özkilçik,Mefharet
Author: Kuvvetli,Ümit
Minimization of Fuel Consumption in City Bus Transportation: A Case Study for Izmir
2012/10/04, volume 54, pp 231-239
In this study, the authors handle a real life optimization problem of a metropolitan city bus service. The problem's focus is the fuel consumption due to dead mileage, given the bus requirements of all route schedules. They obtain the optimal route bus-garage allocations that minimize the total distance covered in all pull-out and pull-in trips, and reach significant improvement levels with respect to the current situation. They consider the midday demand fluctuations on each route, so that some of the buses have to make extra pull-in and pull-out trips before parking at their night garages after ending their last service trips. Moreover, they develop a multicriteria model which takes into account the fuzzy levels of passenger satisfaction and parking safety combined with the previous minimization objective.
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http://www.sciencedirect.com/science/article/pii/S1877042812042048

Procedia - Social and Behavioral Sciences, Elsevier
Author: Goryaev,Nikolay,K
The Effectiveness of Long-distance Haulage in the Context of Market Reforms in Russia
2012/10/04, volume 54, pp 286-293
Due to the fragmentation of Russian transport industry, its effectiveness has decreased, unproductive downtime and the number of empty runs have increased. Increased loading delays lead to a number of negative consequences. First and foremost, it is inefficient and insufficient use of modern fuel-efficient vehicles due to the high fixed cost ratio in total cost (the majority of the carriers rely on used vehicles; average vehicle age in Russia exceeds 10 years). Secondly, short empty runs on the route are impractical (about 20% of total vehicle mileage consist of empty runs). The dependence of fixed and variable costs from vehicle age has been analyzed. The influence of load and unload time on the choice of a vehicle with regard to the transportation distance has been determined. The effect of the load/unload time reduction, including energy efficiency, has been calculated. The proposals for normative regulation of time for loading and unloading are suggested.
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http://www.sciencedirect.com/science/article/pii/S1877042812042097

Procedia - Social and Behavioral Sciences, Elsevier
Author: Blandin,Sébastien
Author: Goatin,Paola
Author: Piccoli,Benedetto
Author: Bayen,Alexandre
Author: Work,Daniel
A General Phase Transition Model for Traffic Flow on Networks
2012/10/04, volume 54, pp 302-311
A general class of macroscopic traffic flow models describing traffic dynamics on transportation networks is presented, with emphasis on the formulation of the junction problem. The type of admissible waves generated at junctions under the formulation proposed and their impact on vehicle energy consumption are described.
Conference: 15th Meeting of the EURO Working Group on TransportationEuropean Working Group on Transportation (EWGT)Paris,France StartDate:20120910 EndDate:20120913 Sponsors:European Working Group on Transportation (EWGT)
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http://www.sciencedirect.com/science/article/pii/S1877042812042115

Procedia - Social and Behavioral Sciences, Elsevier
Author: Seyedabrishami,Seyedehsan
Author: Mamdoohi,Amirreza
Author: Barzegar,Ali
Author: Hasanpour,Sajjad
Impact of Carpooling on Fuel Saving in Urban Transportation: Case Study of Tehran
2012/10/04, volume 54, pp 323-331
Approximately 40 percent of fuel consumption in large cities is related to transportation. A noticeable amount of fuel is wasted due to traffic congestion in peak hours. Transportation planners look for policies to reduce congestion to save fuel and increase energy efficiency. One of the policies is carpooling that emphasizes on a shared use of private cars. In this paper, the factors which persuade travellers to choose carpooling are investigated for Tehran city, capital of Iran. A stated preferences (SP) survey has been used to observe travellers' tendency of carpooling. SP is a survey technique which mathematically shows the preferences, based on people's stated choices and their responses to hypothetical situations. The survey questionnaires filled out by 470 travellers used their own automobiles. Considering the data, carpooling impacts are analyzed in different situations. In this approach a demand function is calibrated and utilized to predict percent of travellers choose carpooling. When all interested travellers, independence of knowing appropriate rideshare or not, choose carpooling then vehicle trips per day would decrease about 780000 vehicle trips per day and reduce annual fuel consumption by 336.53 million litres. The results show that if appropriate strategies like carpooling websites are designed to help travellers for identifying appropriate rideshares, carpooling would increase by 30 percent and this increase will reduce annual fuel consumption about 240 million litres. Results also show that high occupancy vehicle lanes (HOV) that reduce travel time for ridesharing may not highly influence on carpooling tendency of travellers.
Conference: 15th Meeting of the EURO Working Group on TransportationEuropean Working Group on Transportation (EWGT)Paris,France StartDate:20120910 EndDate:20120913 Sponsors:European Working Group on Transportation (EWGT)
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http://www.sciencedirect.com/science/article/pii/S1877042812042139

Procedia - Social and Behavioral Sciences, Elsevier
Author: Yang,Dujuan
Author: Timmermans,Harry
Effects of Fuel Price Fluctuation on Individual CO2 Traffic Emissions: Empirical Findings from Pseudo Panel Data
2012/10/04, volume 54, pp 493-502
Globalized concerns about greenhouse gasses and increased energy consumptions have stimulated research in transportation about the relationships between fuel prices and emissions. Many researchers have found that higher fuel price can reduce fuel consumption and CO2 emissions through a number of transmission mechanisms. However, most prior studies have been based on aggregate data and therefore do not reflect individual or household CO2 adaptation behavior. Moreover, most studies have used cross-sectional data which inherently limit the study of dynamic effects. This paper therefore uses a pseudo-panel approach to estimate a dynamic model of transportation energy consumption and CO2 emission. Seemingly unrelated regression analysis is used to reveal the interrelations between several dimensions of individual travel behavior such as the number of trips conducted, CO2 emission, travel distance and fuel price. The results indicate that increasing fuel prices have negative effects on vehicle miles travelled, fuel consumption and CO2 emissions, but positive effects on travel distance by public transport and slow modes.
Conference: 15th Meeting of the EURO Working Group on TransportationEuropean Working Group on Transportation (EWGT)Paris,France StartDate:20120910 EndDate:20120913 Sponsors:European Working Group on Transportation (EWGT)
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http://www.sciencedirect.com/science/article/pii/S1877042812042292

Procedia - Social and Behavioral Sciences, Elsevier
Author: Baptista,Patricia,C
Author: Azevedo,Ines,L
Author: Farias,Tiago,L
ICT Solutions in Transportation Systems: Estimating the Benefits and Environmental Impacts in the Lisbon
2012/10/04, volume 54, pp 716-725
Information and communication technologies (ICT) holds the potential to dramatically change the way people drive and their mobility patterns, thus potentially reducing greenhouse gas (GHG) emissions, air pollutants and fatalities. This work studies the potential environmental and economic impacts of implementing ICT measures in personal transportation for three scenarios of ICT applications. In the first application, the effects of limiting driving speed are investigated. Non-compliance with speed limits accounts for a large part of fatal car accidents in Portugal, and therefore understanding the impact of such applications is crucial in the context of a national transportation safety policy. In this application, stricter speed limits can be obtained either by on-board vehicle devices influencing the driver not to exceed certain speed limits or on the road network imposing lower speed limits. In the second application, the impacts of fostering an eco-driving behavior are studied. This case studies the impact of a massive adhesion by the public to eco-driving using ICT to present the drivers with the results of their behavioral changes. The third case study assesses the impacts of the implementation of a taxation system based on on-board vehicle devices that indicate where and when the vehicle is being driven and rewarding or penalizing the driver for it. For this study the Lisbon region was addressed. The results show that different ICT applications can have considerable impacts in terms of energy consumption reductions: Scenario 2 (with main variable being speed limitation) reached a 12% reduction in 2020 compared to the BAU (the expected energy consumption from 2011 to 2020 based on Baptista et al. 2011), followed by Scenario 4 (with main variable being eco-driving) with a 5.5% reduction, and the taxation Scenario 6 presented a 1.8% reduction. In terms of carbon dioxide (CO2) emissions, the avoided CO2 emissions from implementing these scenarios varies from 19 to 276 kton in Scenarios 3 (with main variable being eco-driving) and 2 respectively. In terms of the avoided cost from the fuel not consumed and CO2 emissions not emitted, as well as the revenue from the taxation scheme, the scenario results range from 9 to 134 M€ for Scenarios 3 and 2 respectively.
Conference: 15th Meeting of the EURO Working Group on TransportationEuropean Working Group on Transportation (EWGT)Paris,France StartDate:20120910 EndDate:20120913 Sponsors:European Working Group on Transportation (EWGT)
http://dx.doi.org/10.1016/j.sbspro.2012.09.789
http://www.sciencedirect.com/science/article/pii/S1877042812042516

Author: Miyoshi,M
Author: Takeba,T
Author: Miyatake,M
Development of an energy efficient train traffic control system for saving electricity
ISSN: 9781845646165
2012/09, pp 499-510
In order to decrease railroad train energy consumption, an energy efficient railroad train traffic control system is in development. The control system reduces the running energy consumed by assigning a number of seconds of scheduled margin times to platforms at inter-stations. The system is most useful for urban trains. While attending to train delay, the control system tweaks the arrival and departure times at railroad stations, without passengers being aware that anything is different.
Conference: Thirteenth International Conference on Design and Operation in Railway Engineering (COMPRAIL 2012)Wessex Institute of TechnologyNew Forest,United Kingdom StartDate:20120911 EndDate:20120913 Sponsors:Wessex Institute of Technology

Transport Policy, Elsevier
Author: Litman,Todd
Changing North American vehicle-travel price sensitivities: Implications for transport and energy policy
2013/07, volume 28, pp 2-10
There is a growing interest in transportation pricing reforms (increased fuel taxes, efficient road and parking pricing, and distance-based vehicle insurance and registration fees) to help achieve various policy objectives including reduced traffic congestion, accidents and pollution emissions. Their effectiveness is affected by the price sensitivity of vehicle fuel consumption and travel, measured as elasticities (percentage change in consumption caused by a percentage change in price). Lower elasticities imply that price reforms are relatively ineffective in achieving objectives, high prices significantly harm consumers, and rebound effects are small so strategies that increase vehicle fuel efficiency are relatively effective at conserving fuel. Higher elasticities imply that price reforms are relatively effective in achieving objectives, consumers can easily reduce fuel consumption and vehicle travel, and rebound effects are relatively large. Some studies found that US price elasticities declined during the last quarter of the Twentieth Century but recent evidence suggests that vehicle travel has since become more price sensitive. This article examines evidence of changing vehicle fuel and travel elasticities, and discusses policy implications.
http://dx.doi.org/10.1016/j.tranpol.2012.06.010
http://www.sciencedirect.com/science/article/pii/S0967070X12000947

Journal of Transportation Systems Engineering and Information Technology, Elsevier
Author: Sun,Qipeng
Author: JI,Jiao
Author: Xu,Cheng
Energy Consumption Driving Factors and Measuring Models of Regional Integrated Transport System
2013/06, volume 13, issue 3, pp 1-9
To identify the energy consumption driving factors and measure their corresponding contributions in energy consumption, the paper classifies the factors into scale effect, structure effect and technique effect according the driving mechanism. It then analyzes the correlations between these factors by ASIF data structural principles and the time series regression. The contributions of these factors are measured via the expanded logarithmic mean divisia index (LMDI) decomposition model based on the LMDI method. The result indicate that: (1) the impacts from scale effect and technique effect are weakening, while that from structure effect is increasing; (2) the transport supply structure needs to be further optimized, and there exists plenty of space for reducing the impact on energy consumption; (3) the energy efficiency has increased a lot in recent years, but its contribution to energy consumption is shrinking. Improving the transport intensity exerts significant effect on saving energy. The reliability of the models and its conclusions is proved by empirical studies, which provides scientific supports for the policy making of regional low-carbon integrated transport.
http://dx.doi.org/10.1016/S1570-6672(13)60108-7
http://www.sciencedirect.com/science/article/pii/S1570667213601087

Journal of Transportation Systems Engineering and Information Technology, Elsevier
Author: WU,Keqi
Author: Mao,Baohua
Author: Wang,Yongliang
Author: Sun,Quanxin
Intercity Rail Transport Pricing Strategy Based on Efficacy Coefficient Method
2013/06, volume 13, issue 3, pp 105-110
By utilizing the efficacy coefficient method, this study proposes a multi-criteria modeling approach for the reasonable pricing decision of intercity rail passenger transport. The proposed model aims at minimizing the average travel time and energy consumption per passenger-trip for an intercity rail passenger transport system. It is empirically confirmed that the variation of the ticket price imposes significant influence upon the transport ratios of different travel modes. It is proved that the average travel time per passenger-trip and the system energy consumption declines with the reduced fare. As for the operation of rail passenger transport system mentioned in the case study, if its fare is adjusted to 55.8 yuan/passenger-trip, the average travel time and energy consumption per passenger-trip decrease by 7.8% and 2.1%, respectively. This study is able to assist the sensible decision-making of ticket price, which can also effectively promote the operation efficiency and sustainability of an intercity rail transport system.
http://dx.doi.org/10.1016/S1570-6672(13)60112-9
http://www.sciencedirect.com/science/article/pii/S1570667213601129

Author: Toutanji,Houssam,A
Author: Anderson,Michael
Author: Leonard,Kathleen,M
Developing Sustainable Transportation Performance Measures for ALDOT
2013/06 ,Final Report, 52p
Sustainable transportation is generally used to refer to transportation that contributes to the sustainable development of the community that owns and uses the system. The Transportation Research Board defines sustainability as: “Sustainability is not about threat analysis; sustainability is about systems analysis. Specifically, it is about how environmental, economic and social systems interact to their mutual advantage or disadvantage at various space-based scales of operation.” Sustainability involves improving energy efficiency, reducing dependence on oil, reducing greenhouse gas emissions and benefiting the environment. The research project was designed to establish a baseline understanding of the potential for using sustainability performance measures in the Alabama Department of Transportation. Quite a number of sustainability initiatives have discussed various definitions and performance measures of sustainable transportation systems, but very few regional agencies have developed planning tools that successfully incorporate sustainability in the transportation sector. This study develops a working definition of sustainability from various proposed definitions, and demonstrates a feasible methodology for evaluating and quantifying sustainability performance measures, thus incorporating sustainability considerations into the regional transportation decision-making process.
http://ntl.bts.gov/lib/48000/48000/48078/12302-Final-Report.pdf

Author: Lin,Jane
Author: Chen,Qin
Author: Kawamura,Kazuya
Environmental and Energy Benefits of Freight Delivery Consolidation in Urban Areas
2013/03 ,Final Report, 65p
Among new, innovative city logistics strategies, delivery cooperation has received increasing academic and practical attention mostly in Europe and Japan. The idea is to establish cooperation among the suppliers, carriers and the customers through Urban Consolidation Center (UCC), a public facility usually located at the city boundary; with proper consolidation of loads and routing, the goods are then sent to the customers in the urban area with cleaner vehicles and less vehicle miles traveled (VMT). This study investigates the feasibility of UCC in an urban setting at the tactical level with respect to total logistics cost and environmental impact. In other words, whether UCC could reduce the logistics cost which involves the monetary costs for activities from production to consumption, while maintaining acceptable level of energy consumption and vehicular emissions. It is found that under certain conditions, UCC may become a favorable last-mile urban delivery solution to the current one without a UCC. Especially the benefits of UCC strategies become significant when the customer rent cost is high and UCC terminal operation cost is low. UCC becomes more beneficial as the economic scale is greater (i.e., higher numbers of customers and suppliers). In addition, public subsidy for UCC terminals would make urban cooperative delivery more competitive, resulting in lower truck VMT and emissions in the urban area.
http://www.wistrans.org/cfire/documents/FR_0319.pdf

Transportation Research Part D: Transport and Environment, Elsevier
Author: Yang,Yi-Chih
Author: Lin,Chao-Liang
Performance analysis of cargo-handling equipment from a green container terminal perspective
2013/08, volume 23, pp 9-11
This study employs a green container terminal perspective to compare the performance of four types of cargo handling equipment used in container yards - automatic rail, rail, electric tire, and tire transtainers - based on working efficiency, energy saving performance, and carbon reductions. It is found that automatic rail and electric tire transtainers are the optimal types of green cargo handling equipment.
http://dx.doi.org/10.1016/j.trd.2013.03.009
http://www.sciencedirect.com/science/article/pii/S1361920913000527

Transportation Research Part D: Transport and Environment, Elsevier
Author: Gucwa,Michael
Author: Schäfer,Andreas
The impact of scale on energy intensity in freight transportation
2013/08, volume 23, pp 41-49
This paper analyzes energy intensities of ships, diesel-fuelled railways, trucks, and aircraft, using publicly available data. The analysis suggests that differences in operation, not technology, explain most of the variation in energy intensity within and across modes. Among the operational characteristics, most important is the amount of cargo weight transported per vehicle and therefore the scale of the respective transportation system. It is found that each mode has a characteristic envelope in an average energy intensity versus average cargo weight diagram, and estimates of the elasticities of energy intensity with respect to load size are made.
http://dx.doi.org/10.1016/j.trd.2013.03.008
http://www.sciencedirect.com/science/article/pii/S1361920913000515

Costs and Benefits of MDOT Intelligent Transportation System Deployments

Traffic congestion has been a worldwide problem as a result of increased motorized traffic and urbanization. Congestion reduces efficiency of transportation infrastructure and increases travel time, fuel consumption, and air pollution. In many regions in the United States, traffic jams can occur at any daylight hour, many nighttime hours and on weekends. The problems that travelers and shippers face include extra travel time, unreliable travel time and a system that is vulnerable to a variety of irregular congestion-producing incidents. According to the Urban Mobility Report (Schrank et al., 2011), congestion caused urban Americans to travel 4.8 billion hours more and to purchase an extra 1.9 billion gallons of fuel at a cost of $101 billion in 2010. Intelligent Transportation Systems (ITS) has been regarded as a cost-effective solution to help travelers in using existing transportation infrastructure by taking advantages from advanced communication technologies, such as advanced traveler information systems (ATIS), advanced traffic management systems (ATMS), advanced public transportation systems (APTS) and commercial vehicle operations (CVO). The concept of ITS has evolved and ITS applications have been expanded to various directions including the Connected Vehicles (CV) technology that applies advanced vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I), vehicle-to-device (V2D) communications technologies. Typically, ITS application areas are classified into two parts: intelligent infrastructure and intelligent vehicles. While applications of intelligent vehicles include collision avoidance, collision notification, driver assistance, etc., those of intelligent infrastructure include various roadside traffic operations and management applications, such as freeway management systems, arterial management systems, crash prevention and safety systems, road weather information systems, traffic incident management, transit management, emergency management, traveler information systems, commercial vehicle operations, intermodal freight management, etc. Various ITS applications are invented and deployed to fulfill U.S. DOT's ITS goals, such as safety, mobility, efficiency, productivity, energy and environmental impacts, and customer satisfaction. The Michigan Department of Transportation (MDOT) strategic plan is followed by regional ITS architectures and deployment plans. MDOT has also invested many advanced ITS technologies, such as Connected Vehicles, to hold leadership in this area as a home state of automobile industry. While many new ITS technologies are being developed and tested worldwide, advanced traffic control and information systems have been deployed to help Michigan motorists and travelers. MDOT's ITS deployment plans include applications in freeway traffic management systems, arterial management system, advanced public transportation systems, freeway service patrols, smart work zone, road weather information systems, and emergency traffic management. MDOT has invested significantly in ITS deployments across the state over the last six years. Michigan's traffic safety and operations have been improved by deploying these ITS technologies. As Peter Ferdinand Drucker, a social ecologist, stated that "You cannot manage what you cannot measure," performance measures are very important. Likewise, the U.S. Department of Transportation (DOT) emphasizes the importance of performance-based planning in the latest authorization of transportation bill, Moving Ahead for Progress in the 21st Century Act (MAP-21). One of the key words in MAP-21 is performance measures. Under MAP-21, performance management is emphasized as a means to more efficient investment through performance-based planning and programming (FHWA, 2012). In fact, due to an increasingly competitive fiscal environment, transportation agencies around the country are being asked more than ever to justify their programs and expenditures. ITS investments are not an exception from this requirement. However, the benefits of Michigan ITS have not been fully quantified yet. Accordingly, MDOT is lacking in responding to inquiries from public and legislators on the costs and benefit of ITS deployments despite its great benefits to Michigan travelers. Therefore, there are needs for reviewing and quantifying costs and benefits of MDOT's ITS investments.

TCRP Synthesis of Transit Practice, Transportation Research Board
Author: Gallivan,Frank
Energy Savings Strategies for Transit Agencies
ISSN: 9780309270830
2013, issue 106, 76p
This synthesis describes how transit agencies in the United States and Canada are reducing their energy use. This is being done not only by providing alternatives to travel in personal vehicles but also in other categories of energy savings strategies such as those dealing with vehicle technologies; vehicle operations, maintenance, and service design; non-revenue vehicles; stations and stops; building; indirect energy use; and renewable power generation. These strategies can reduce both an agency's costs and its' environmental footprint, and some can also improve service quality. A review of the relevant literature of a variety of academic and professional publications was conducted for this effort. A selected survey of 51 respondents out of 74 transportation providers located in large metro, small urban, and rural areas yielded a 69% response rate. Four transit providers highlighted more in-depth and additional details on successful practices, challenges, and lessons learned: Southeastern Pennsylvania Transportation Authority, Philadelphia, Pennsylvania; King County Metro Transit, Seattle, Washington; Foothill Transit, West Covina, California; and 9 Town Transit, Connecticut River Estuary, Connecticut.
http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_syn_106.pdf

Author: Lin,Jane
Author: Chen,Qin
Author: Kawamura,Kazuya
Environmental and Energy Benefits of Freight Delivery Consolidation in Urban Area
2013/03 ,Final Report, 65p
Among new, innovative city logistics strategies, delivery cooperation has received increasing academic and practical attention mostly in Europe and Japan. The idea is to establish cooperation among the suppliers, carriers and the customers through Urban Consolidation Center (UCC), a public facility usually located at the city boundary; with proper consolidation of loads and routing, the goods are then sent to the customers in the urban area with cleaner vehicles and less vehicle miles traveled (VMT). In this study, the authors investigated the feasibility of UCC in an urban setting at the tactical level with respect to total logistics cost and environmental impact. In other words, whether UCC could reduce the logistics cost which involves the monetary costs for activities from production to consumption, while maintaining acceptable level of energy consumption and vehicular emissions. It is found that under certain conditions, UCC may become a favorable last-mile urban delivery solution to the current one without a UCC. Especially the benefits of UCC strategies become significant when the customer rent cost is high and UCC terminal operation cost is low. UCC becomes more beneficial as the economic scale is greater (i.e., higher numbers of customers and suppliers). In addition, public subsidy for UCC terminals would make urban cooperative delivery more competitive, resulting in lower truck VMT and emissions in the urban area.
http://www.wistrans.org/cfire/documents/FR_0319.pdf

A tale of renewed cities: a policy guide on how to transform cities by improving energy efficiency in urban transport systems
2013, 96p
Transport currently accounts for half of global oil consumption and nearly 20% of world energy use, of which approximately 40 per cent is used in urban transport alone. The IEA expects urban transport energy consumption to double by 2050, despite ongoing vehicle technology and fuel-economy improvements. While increased mobility brings many benefits, the staggering rate of this increase creates new challenges. Urgent energy-efficiency policy attention will be needed to mitigate associated negative noise, air pollution, congestion, climate and economic impacts, all of which can cost countries billions of dollars per year. This report highlights lessons learned and examples of good practice from countries with experience implementing a wide range of measures to improve energy efficiency in urban transport systems. This report sets out key steps in planning, implementation, monitoring and evaluation.
http://www.iea.org/publications/freepublications/publication/Renewed_Cities_WEB.pdf

TransNav, the International Journal on Marine Navigation and Safety of Sea Transportation, Akademia Morska w Gdyni
Author: Baldauf,M
Author: Baumler,R
Author: Ölçer,A
Author: Nakazawa,T
Author: Benedict,K
Author: Fisher,S
Author: Schaub,M
Energy-efficient Ship Operation—Training Requirements and Challenges
2013/06, volume 7, issue 2, pp 283-290
The International Maritime Organization (IMO), through its Maritime Environmental Protection Committee (MEPC), has been carrying out substantive work on the reduction and limitation of greenhouse gas (GHG) emissions from international shipping since 1997, following the adoption of the Kyoto Protocol and the 1997 MARPOL Conference. While to date no mandatory GHG instrument for international shipping has been adopted, IMO has given significant consideration of the matter and has been working in accordance with an ambitious work plan, with a view to adopting a package of technical provisions. Beside the efforts undertaken by IMO, it is assumed that optimized manoeuvring regimes have potential to contribute to a reduction of GHG emissions. Such procedures and supporting technologies can decrease the negative effects to the environment and also may reduce fuel consumption. However, related training has to be developed and to be integrated into existing course schemes accordingly. IMO intends to develop a Model Course aiming at promoting the energy-efficient operation of ships. This course will contribute to the IMO's environmental protection goals as set out in resolutions A.947(23) and A.998(25) by promulgating industry "best practices"•, which reduce greenhouse gas emissions and the negative impact of global shipping on climate change. In this paper, the outline of the research work will be introduced and the fundamental ideas and concepts are described. A concept for the overall structure and the development of suggested detailed content of the draft model course will be exemplarily explained. Also, a developed draft module for the model course with samples of the suggested integrated practical exercises will be introduced and discussed. The materials and data in this publication have been obtained partly through capacity building research project of IAMU kindly supported by the International Association of Maritime Universities (IAMU) and The Nippon Foundation in Japan.
http://dx.doi.org/10.12716/1001.07.02.16
http://www.transnav.eu/Article_Energy-efficient_Ship_Operation_,26,437.html

Ocean Engineering, Pergamon
Author: Armstrong,Victor,N
Vessel optimisation for low carbon shipping
2013/11/15, volume 73, pp 195-207
Squeezed between pressures of the economic downturn, the abundance of ships in certain sectors, and an avalanche of regional and international regulations aimed at reducing shipping's impact on climate change, some ship owners and managers have looked to innovate and seek opportunities to grow their influence in shipping markets. Under economic pressure, a number of ship owners turned to hot or cold lay-ups, scrapping unproductive tonnage, or simply getting out of the business. Others looked at the ever increasing cost of bunkers and decided to position themselves as more efficient operators with high quality services to offer. In this respect, some concerted optimisation efforts at Teekay directed in the areas of technical, commercial and operations have helped increase fleet utilization and profitability while ensuring safety and reliability of service. Some of the technical optimisation efforts include PBCF installation, CPP reprogramming, Fuel Slide valve upgrade, Alpha lubricator retrofit, Sonic cleaning of economizer, and cylinder oil consumption optimisation. Operational optimisation initiatives include Cargo heating management, Weather routing, Hull & propeller performance monitoring, and Engine performance monitoring. Commercial optimisation includes development of tools that provide a better understanding of technical and operational limitations from a commercial standpoint. Initiatives like developing procedures for slow steaming operations and the creation of Speed vs. Fuel consumption matrix provide value-added input and technical insight. These tools support channelling efforts on allocation of the best positioned asset to a fixture and being able to select the speed and fuel consumption for both ballast and laden voyages in order to positively affect net voyage revenue. One salutary outcome of the economic downturn has been a sharp reduction in contribution of GHG emissions by shipping. With a revival in fortune of the shipping industry one can expect a corresponding increase in GHG contributions. But does that really need to be the case? Some of the lessons learned since 2009 have contributed significantly to low carbon shipping-like slow steaming. With a strategic alignment of stakeholders' interest to lessen shipping's impact on GHG emissions, these practices can continue to be used.
http://dx.doi.org/10.1016/j.oceaneng.2013.06.018
http://www.sciencedirect.com/science/article/pii/S0029801813002643

Journal of Intelligent Transportation Systems, Taylor & Francis
Author: Höltl,Arne
Author: Trommer,Stefan
Driver Assistance Systems for Transport System Efficiency: Influencing Factors on User Acceptance
2013/08, volume 17, issue 3, pp 245-254
A major success factor for the implementation of intelligent transportation systems (ITS) is knowledge about the user's reaction and response to such technologies. The objective of each development process is to achieve a broad acceptance among those using the system. User acceptance is a key success factor, so it should be taken into account in early development stages. This applies especially for technical solutions requiring frequent interactions, for example, to influence the driver's behavior toward a more efficient driving style. The complexity of developments in the field of ITS raises the question: At what point do users start feeling overloaded and no longer able to handle all functionalities, ultimately rejecting using them? A Europe-wide study was carried out (N = 5,807) focusing on drivers' perceptions of cooperative systems that offer assistance on fuel efficiency. The advanced driver assistance systems (ADAS) used in the study have the potential to change driving behavior in the long term and thus have a sustainable impact to reduce fuel consumption and traffic emissions. ADAS functionalities provide up-to-date traffic information, which is disseminated by traffic management to help traffic flow in a more energy efficient way. Six ADAS functions were assessed in pre-, on-, and post-trip driving situations. The chosen research framework was used to compare the users' perception using a set of relevant acceptance factors that were developed in this study. The results showed significant effects between acceptance factors and the influencing variables. The interrelations between acceptance factors were analyzed using a research model developed in this study. The concept proves to be suitable for studying acceptance of ITS solutions aiming to save fuel.
http://dx.doi.org/10.1080/15472450.2012.716646

Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit, Sage Publications Limited
Author: Beagles,Adam,E
Author: Fletcher,David,I
The aerodynamics of freight: approaches to save fuel by optimising the utilisation of container trains
2013/11, volume 227, issue 6, pp 635-643
Aerodynamic drag is approximately proportional to speed squared so the drag of slower moving freight trains has received less attention than that of higher-speed passenger trains. Key results of wind tunnel tests of European container trains were published in 1989 and are the basis for most assessments of drag of European container trains (American container trains usually have far higher drag due to double-stacking containers or transporting complete semi-trailers and were studied in research programmes at a similar time). The research reported here concerns a reappraisal of the European results and of more recent results obtained from the application of computational fluid dynamics modelling and the results of real-world and wind tunnel testing of the aerodynamics of container wagons. The paper presents empirical equations that can be used to predict the energy savings associated with different container loading scenarios within a fixed length train and the energy required for carrying aerodynamic features such as baffles or fairings. Illustrative examples are provided using data measured during freight operations. The effect on drag of side winds and their speed distributions are included as are representative vehicle speed profiles. Most previous authors have ignored both side winds and end effects; it is shown that the effects of these are opposite but of similar magnitudes so the results of these authors remain valid.
http://dx.doi.org/10.1177/0954409713488101
http://pif.sagepub.com/cgi/content/abstract/227/6/635

Author: Tian,Songjiang
Author: Liu,Yaozong
Author: Wang,Kuilin
Analysis of Advantages of Combined Transportation in Transport Corridor
ISSN: 9780784412602
2012/11, pp 105-109
Transportation modes in transport corridors include waterways, railways, highways, aviation, and pipeline. Each mode of transportation has its own characteristics and advantages. As the single transportation mode in the transport corridor has its own shortcomings, several modes of transport can be combined to address these shortcomings in an effective way. Firstly, the fuzzy comprehensive evaluation method is used to analyze the related factors of transportation modes. Then, the authors analyze the advantages and disadvantages of each transportation mode, the factors of which include transportation speed, accessibility, reliability, security, flexibility, convenience, energy consumption, and transport costs. Secondly, the proper transport distance of each transportation mode in the transport corridor is analyzed. Finally, several commonly combined transportation modes are analyzed in, such as waterway-railway transportation, waterway-railway-highway transportation, and waterway-highway transportation. At the same time, the authors can make reasonable transportation programs under the conditions of transport distance and other transportation restrictions, thus providing a theoretical basis for transport corridor planning and construction.
Conference: Inernational Conference of Logistics Engineering and Management 2012Southwest Jiaotong UniversityAmerican Society of Civil EngineersChengdu,China StartDate:20121008 EndDate:20121010 Sponsors:Southwest Jiaotong University, American Society of Civil Engineers
http://dx.doi.org/10.1061/9780784412602.0017

Author: Zha,Jianping
Author: Ju,Xiaogang
Energy Consumption, Carbon Emissions, and Transport Economical Growth in China-An Empirical Analysis Based on Decoupling Theory
ISSN: 9780784412602
2012/11, pp 866-871
The paper researches the decoupling relationship between transport economical growth, energy consumption and carbon emissions in China during 2000-2009 with the related theory and measurement model on “decoupling” and “coupling”. The results show that the follow-up emphasis of decoupling work is to further improve the technology of transport energy efficiency, focus on optimizing traffic mode and energy structure as well as improving the energy production structure and energy consumption structure.
Conference: Inernational Conference of Logistics Engineering and Management 2012Southwest Jiaotong UniversityAmerican Society of Civil EngineersChengdu,China StartDate:20121008 EndDate:20121010 Sponsors:Southwest Jiaotong University, American Society of Civil Engineers
http://dx.doi.org/10.1061/9780784412602.0134

Procedia - Social and Behavioral Sciences, Elsevier
Author: Niu,Dening
Author: Sun,Jian
Eco-driving Versus Green Wave Speed Guidance for Signalized Highway Traffic: A Multi-vehicle Driving Simulator Study
2013/11/06, volume 96, pp 1079-1090
New in-vehicle systems provide the driver with speed advises through the variable message signs and the use of an in-car display. In this paper, two dynamic speed guidance strategies (green wave speed guidance strategy (GWSGS) and eco-driving speed guidance strategy (EDSGS)) through in-car display were tested. A new multi-vehicle driving simulator platform taking into account drivers interactions was built, and the two strategies for highway system were programmed through the script language provided by Virtools software. To evaluate the effectiveness of the overall strategies, 15 typical drivers were recruited to take part in the speed guidance experiments. It was found that the number of stops is both significantly reduced for the vehicles with the GWSGS and EDSGS. Compared with the vehicles without speed guidance, the fuel consumption and carbon dioxide (CO?) emissions can be reduced by 25% and 13% under the EDSGS and GWSGS respectively. The eco-driving vehicle's velocity trajectory is smoother than that of the green wave vehicle, and the average compliance rate of EDSGS is higher than GWSGS. The EDSGS showed more benefits than the GWSGS.
Conference: 13th COTA International Conference of Transportation Professionals (CICTP 2013)Transportation Research BoardAmerican Society of Civil EngineersInstitute of Transportation Engineers (ITE)ElsevierShenzhen,China StartDate:20130813 EndDate:20130816
Sponsors:Transportation Research Board, American Society of Civil Engineers, Institute of Transportation Engineers (ITE), Elsevier
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http://www.sciencedirect.com/science/article/pii/S1877042813022507

IEEE Transactions on Intelligent Transportation Systems, Institute of Electrical and Electronics Engineers (IEEE)
Author: Muñoz-Organero,Mario
Author: Magaña,Víctor,Corcoba
Validating the Impact on Reducing Fuel Consumption by Using an EcoDriving Assistant Based on Traffic Sign Detection and Optimal Deceleration Patterns
2013/06, volume 14, issue 2, pp 1023-1028
This paper implements and validates an expert system that, based on the detection or previous knowledge of certain types of traffic signals, proposes a method to reduce fuel consumption by calculating optimal deceleration patterns, minimizing the use of braking. The expert system uses a mobile device's embedded camera to monitor the environment and to recognize certain types of static traffic signals that force or can force a vehicle to stop. The system uses an adaptation of the algorithm proposed by Viola and Jones for the recognition of faces in real time, adapted to the detection of traffic signals. Detected signals are also incorporated into a central database for future use. When the vehicle approaches an upcoming traffic signal, the algorithm estimates the distance required to stop the vehicle without using the brakes, taking into account the rolling resistance coefficient and the road slope angle. Appropriate advice and feedback are provided to the driver to release the accelerator pedal. The expert system is implemented on Android mobile devices and has been validated using a data set of 180 tests with five different models of vehicles and nine different drivers. The main contribution of this paper is the proposal of an assistant that uses information from the environment and from the vehicle to calculate optimal deceleration patterns when approaching traffic signals that force or may force the vehicle to stop. In addition, the proposed solution does not require the installation of infrastructure on the road, and it can be installed into any vehicle.
http://dx.doi.org/10.1109/TITS.2013.2247400

Author: De Blasiis,Maria,Rosaria
Author: Di Prete,Mauro
Author: Guattari,Claudia
Author: Veraldi,Valerio
Author: Chiatti,Giancarlo
Author: Palmieri,Fulvio

Influence of Highway Traffic Flow Condition on Pollutant Emissions of Diesel Passenger Cars Using Driving Simulator

2014, 12p

In the last 20 years the attention of international organizations towards air pollution has been improved, leading to definition of laws and regulations. In order to evaluate strategies and policies, forecasting tools have been adopted by institutions. Currently, the estimation of traffic emissions is based on static models, in which the amount of pollutant is computed as a function of average parameters (average speed). The well-known traffic increase of the recent years has significantly changed the actual flow conditions, producing a strong rise of interferences. As this facet affects the operating condition of each vehicle, the use of a standard emission model at high traffic interference can lead to some inaccuracies. In such cases, instantaneous emission models introduce deeper capabilities; essentially, the pollutant prediction is directly tied to the engine vehicle operation point in real-like traffic condition. This second modeling approach has been adopted in the current work. A complete lumped parameter vehicle model has been built to be used as a virtual on-road emission/fuel consumption test unit. Investigations have highlighted the dependence of emission level and fuel consumption on drivers' behavior; indeed, the analysis took advantage of the experiments carried out in the virtual reality laboratory: on a typical highway geometry, three different flow conditions have been simulated. In the present study has been highlighted the relationship between drivers behavior and the emissions of a diesel compact passenger car. Finally, in order to assess the differences between static and instantaneous emission models, a comparative analysis has been carried out.

Conference: Transportation Research Board 93rd Annual MeetingTransportation Research BoardWashington,DC StartDate:20140112 EndDate:20140116 Sponsors:Transportation Research Board

Author: Nichols,Brice,G
Author: Kockelman,Kara,M
Transportation Systems and the Built Environment: Life-Cycle Energy Case Study and Analysis
2014, 23p
The built environment can be used to influence travel demand, but very few studies consider the relative energy savings of such policies in context of a complex urban system. This analysis quantifies the day-to-day and embodied energy consumption of four different neighborhoods in Austin, Texas, to examine how built environment variations influence various sources of urban energy consumption. A microsimulation combines models for petroleum use (from driving) and residential and commercial power and natural gas use with rigorously measured building stock and infrastructure materials quantities (to arrive at embodied energy). Results indicate that the more suburban neighborhoods, with mostly detached single-family homes, consume up to 320% more embodied energy, 150% more operational energy, and about 160% more total life-cycle energy (per capita) than a densely developed neighborhood with mostly low-rise-apartments and duplexes. Across all neighborhoods, operational energy use comprised 83 to 92% of total energy use, and transportation sources (including personal vehicles and transit, plus street, parking structure, and sidewalk infrastructure) made up 44 to 47% of the life-cycle energy demands tallied. Energy elasticity calculations across the neighborhoods suggest that increased population density and reduced residential unit size offer greatest life-cycle energy savings per capita, by reducing both operational demands from driving and home energy use, and from less embodied energy from construction. The results support the notion that transportation and the built environment are strongly linked, and improving urban energy efficiency must come from policies and designs targeting embodied sources, not just a household's travel and daily energy consumption.
Conference: Transportation Research Board 93rd Annual MeetingTransportation Research BoardWashington,DC StartDate:20140112 EndDate:20140116 Sponsors:Transportation Research Board
http://docs.trb.org/prp/14-1825.pdf

Author: Wang,Y
Author: De Schutter,B
Author: van den Boom,T,J J
Author: Ning,B
Author: Tang,T
Origin-Destination Dependent Train Scheduling Problem with Stop-Skipping for Urban Rail Transit Systems
2014, 16p
The train scheduling problem with the origin-destination (O-D) dependent passenger demands is considered for urban rail transit systems. In this paper, trains are allowed to skip any intermediate stations (except the origin station and the final station) to reduce the passenger travel time and to save energy consumption. A model of train movements with stop-skipping and the O-D dependent passenger demands is formulated. A bi-level optimization approach is proposed to solve the train scheduling problem with stop-skipping, which is essentially a mixed integer nonlinear programming problem. The performance of the proposed approach is illustrated via a case study using data of the Beijing Yizhuang subway line.
Conference: Transportation Research Board 93rd Annual MeetingTransportation Research BoardWashington,DC StartDate:20140112 EndDate:20140116 Sponsors:Transportation Research Board

Transportation Research Record: Journal of the Transportation Research Board, Transportation Research Board
Author: Wang,Haifeng
Author: Lutsey,Nicholas
Long-Term Potential to Reduce Emissions from International Shipping by Adoption of Best Energy-Efficiency Practices
ISSN: 9780309295147
2014, issue 2426, pp 1-10
Maritime shipping is highly fuel-efficient, but its sheer volume and rapid growth make it a major source of carbon emissions. Industry and governments seek to reduce the energy use and carbon footprint of shipping. Yet the reasons for the variation in shipping efficiency observed in the world fleet's embrace of best technical and operational practices to increase efficiency remain unexplained. The research reported in this paper offers a novel analysis that connected 2011 in-use fleet characteristics, first-ever global satellite data on ship movement, and technical literature on ship efficiency technology to assess the long-term prospects of increased shipping efficiency. This study also investigated how each ship characteristic influenced the efficiency of the shipping fleet. A ship stock turnover model was developed to track technical and operational efficiency practices in ships independently. The findings indicated that industry-leading ships were about twice as efficient as industry laggards across major ship types. If the available technical and in-use practices of the low-carbon industry leaders of today were fully embraced, the potential would exist to reduce carbon dioxide in absolute terms by more than 300 million metric tonnes by 2040, even while business-as-usual freight movement doubled. On the basis of the data in this assessment, the potential exists to develop a tool for shippers to quantify, evaluate, and compare their supply chain carbon footprints in a manner that does not rely on more aggregated fleet-average simplifications. The methodology, data, and findings of this study should benefit industry as it looks for ways to reduce energy consumption; researchers, who are examining ship operation; and policy makers, who want to curb the climate impact of international shipping.
http://dx.doi.org/10.3141/2426-01
http://scholar.google.com/scholar_lookup?title=Long-Term+Potential+to+Reduce+Emissions+from+International+Shipping+by+Adoption+of+Best+Energy-Efficiency+Practices&author=H.+Wang&author=N.+Lutsey&publication_year=2014

Transportation Research Record: Journal of the Transportation Research Board, Transportation Research Board
Author: Jordan,Brooke
Author: Makler,Jon
Author: Bertini,Robert
State of Knowledge and Practice: Opportunities for Intelligent Transportation Systems in the Energy Arena
ISSN: 9780309295192
2014, issue 2423, pp 1-9
This study examined the capacity of intelligent transportation systems (ITS) to reduce energy consumption in the transportation sector. Research included a literature review focused on the energy-saving capacity of ITS technologies and interviews with ITS stakeholders and transportation experts and practitioners. A case study of an ITS project in Portland, Oregon, was used to illustrate the challenges and the opportunities associated with implementing ITS technologies. The objective of this study was to document the state of knowledge and practice and to create a resource for action and implementation of ITS technologies with energy savings as a goal. There is a lack of empirical evidence to substantiate the capacity of ITS to reduce energy consumption in the transportation sector. However, research indicates that the use of ITS has contributed to reductions in vehicular delay but further benefits may be limited. In contrast, ITS does have the potential to reduce vehicle miles traveled (VMT), with significant benefits, although the benefits are uncertain. The shortage of empirical evidence of ITS benefits may be a function of the limited interest in the energy and environmental benefits of ITS compared with the interest in congestion and safety. In the ITS industry, the focus is on the connected vehicle initiative and, more broadly, the many opportunities to integrate and to leverage multiple ITS applications. There are opportunities to deploy ITS technologies with the purpose of reducing energy consumption in the transportation sector, to document any gains, and to address the lack of evidence supporting the energy-reducing capacity of ITS.
http://dx.doi.org/10.3141/2423-01
http://scholar.google.com/scholar_lookup?title=State+of+Knowledge+and+Practice%3a+Opportunities+for+Intelligent+Transportation+Systems+in+the+Energy+Arena&author=B.+Jordan&author=J.+Makler&author=R.+Bertini&publication_year=2014

Author: Ben Moshe,Boaz
Author: Hadas,Yuval
Author: Levi,Harel
Energy-Efficient Framework for Indoor and Outdoor Tracking of Public Transit Passengers Using Bluetooth-Enabled Devices
2014, 16p
The quality and availability of a data collection system are essential for a high-quality planning and operations phases of Public transit (PT) systems. Passengers' demand (both spatial and temporal) is a key component in those phases. Unfortunately, acquiring passenger demand is a complex and time-consuming process. Various information technologies are used by PT operators to assist in the planning and operations phases. The main systems being used are Automatic Vehicle Location systems, Automatic Passenger counting systems, and Automatic Fare Collection systems. Those systems are not capable of completely tracking passengers' movements throughout the system. Hence accurate demand estimation is not possible. Global Navigation Satellite System technology can overcome the disadvantages of those systems. The main drawbacks of such an approach are the high-energy consumption and lack of indoor use. A novel approach for tracking passengers is introduced, which has the advantages of being both energy-efficient and accurate (indoor and outdoor). Such an approach can provide the necessary means to overcome the above-mentioned issues with current technologies. In this paper, the authors successfully demonstrate the capabilities of Bluetooth Low Energy for tracking passengers outdoor and indoor. Combined with the proposed algorithms, it is possible to accurately track passengers and model and estimate demand.
Conference: Transportation Research Board 93rd Annual MeetingTransportation Research BoardWashington,DC StartDate:20140112 EndDate:20140116 Sponsors:Transportation Research Board

Author: Lu,I,J
Author: Chang,Yu-Hern
Author: Cheng,Yung-Hsiang
Transportation Policy Effects on Urban Fuel Consumption and Energy Reduction
2014, 26p
This study establishes a simplified system dynamics model with a time frame from 1995 to 2025 to simulate the effects of urban transportation management polices and to explore their potential to reduce vehicular fuel consumption and mitigate CO? emissions. Kaohsiung City was selected as a case study because it is the second largest metropolis in Taiwan and an important industrial center. Results of the simulation indicate that a fuel-tax policy will reduce by 13.2% the number of motor vehicles driven in the city, and by 11.0% the amount of gasoline required for their use. A parking-management policy will reduce both vehicles and fuel consumption by 21.7% and 6.0%, respectively. Finally, an extensively implemented free bus service will reduce both by only 2.3% and 0.8%, respectively. Therefore, both the fuel tax and parking management policies are suggested as potentially the most effective methods for restraining the growth of the number of private vehicles, the amount of fuel consumption and CO? emissions. The information herein proves useful for urban transportation management managers and policy makers of city government.
Conference: Transportation Research Board 93rd Annual MeetingTransportation Research BoardWashington,DC StartDate:20140112 EndDate:20140116 Sponsors:Transportation Research Board

Author: Chen,Qin
Author: Lin,Jie (Jane)
A Preliminary Investigation of Sustainable Urban Truck Routing Strategies Considering Cargo Weight and Vehicle Speed
2014, 18p
Traditional (sustainable) vehicle routing problem (VRP) literature typically treats all stops equally in routing. In other words, routing is affected only by link/arc properties and node properties do not influence the link/arc properties. This treatment works reasonably well in passenger vehicle VRP, however, it does not apply to urban commercial vehicle routing when loading and unloading activities are performance at customer points (nodes). This research attempts to fill the literature gap by investigating the more realistic sustainable vehicle routing strategies by considering the joint effect of commercial vehicle load and speed on energy consumption or pollutant emissions or both. Moreover, idling energy consumption and emissions at stops (due to loading and unloading at the customer's) will also be incorporated in the optimal routing strategies. Specifically, this paper presents the preliminary investigation towards filling that gap. Using a numerical example, this paper has demonstrated the noticeable (joint) effects of vehicle payload, vehicle speed, and dwell time on urban commercial vehicle PM2.5 emissions and energy consumption. Thus vehicle payload and speed could affect the visiting order of a distribution tour if minimizing the energy consumption or emissions is the objective.
Conference: Transportation Research Board 93rd Annual MeetingTransportation Research BoardWashington,DC StartDate:20140112 EndDate:20140116 Sponsors:Transportation Research Board

Author: Nasri,Arefeh
Author: Zhu,Zheng
Author: Zamir,Kiana,Roshan
Author: Xiong,Chenfeng
Author: Zhang,Lei
Simulation-Based Approach for Analyzing the Regional and Local Impacts of Transit-Oriented Development on Congestion and Emissions
2014, 17p
The effects of transit-oriented development (TOD) on congestion reduction and its environmental benefits have not been extensively tested in the current literature. This paper proposes a mathematically rigorous definition for TOD and develops advanced tools to investigate the various benefits of TOD. A large-scale microscopic traffic simulation model and the EPA's (Environmental Protection Agency) MOVES (Motor Vehicle Emission Simulator) model have been employed to evaluate TOD performance in the transportation system and investigate its environmental benefits. Results suggest that TOD reduces total delay in the whole simulated network by 4 percent and by 35 percent for the trips originating from TOD zones. By converting the amount of travel time and fuel consumption savings into equivalent monetary values, the TOD scenario provides a total of $20,586,800 from travel time savings ($20 value of time) and $604,074 savings in fuel consumption annually for the PM peak period. However, the effect of TOD on travel time and fuel savings is more significant in the local surroundings of TOD zones.
Conference: Transportation Research Board 93rd Annual MeetingTransportation Research BoardWashington,DC StartDate:20140112 EndDate:20140116 Sponsors:Transportation Research Board

Author: Du,Lili
Author: Peeta,Srinivas
Author: Wei,Peng
Author: Sun,Dengfeng

A Quantitative and Systematic Methodology to Investigate Energy Consumption in Multimodal Transportation Systems

2014, 18p

Energy issues in transportation systems have garnered increasing attention in recent years in both the public and private sectors. This study proposes a systematic methodology for policy-makers to improve energy consumption efficiency in multimodal intercity transportation systems considering suppliers' operational constraints and travelers' mobility requirements. A bi-level optimization model is developed for this purpose and considers the air, rail, private auto, and transit modes. The upper level model is a mixed integer nonlinear program that aims to minimize energy consumption subject to transportation suppliers' operational constraints and the traffic demand distribution to paths resulting from the lower level model. The lower level model is a linear program that seeks to maximize the intercity trip utilities of travelers. The interactions between the multimodal transportation suppliers and intercity traffic demand are considered under the goal of minimizing energy consumption at the system level. The proposed bi-level mixed integer nonlinear model is relaxed and transformed into a mathematical program with complimentarity constraints, and solved using a customized branch-and-bound algorithm. Numerical experiments, conducted using multimodal travel options between Lafayette, Indiana and Washington, D.C. reiterate that shifting traffic demand from private cars to the transit and rail modes can significantly reduce energy consumption. More importantly, the proposed methodology is able to provide quantitative analyses for system energy consumption and traffic demand distribution among transportation modes under specific policy instruments. The results also illustrate the need to systematically incorporate the interactions between traveler preferences, network structure, and supplier operational schemes to provide policy-makers insights for developing traffic demand shift mechanisms to minimize system energy consumption. Hence, the proposed methodology can provide policy-makers the ability to analyze energy consumption in the transportation sector under different policy instruments.

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http://docs.trb.org/prp/14-3996.pdf

Transportation Research Record: Journal of the Transportation Research Board, Transportation Research Board
Author: Gbologah,Franklin,E
Author: Xu,Yanzhi
Author: Rodgers,Michael,O
Author: Guensler,Randall
Demonstrating a Bottom-Up Framework for Evaluating Energy and Emissions Performance of Electric Rail Transit Options
ISSN: 9780309295161
2014, issue 2428, pp 10-17
Current frameworks for analyzing emissions performance of public transportation systems use top-down approaches that can often provide useful information at the network level but can be uninformative at the project level at which the influence of route and vehicle characteristics can significantly impact emission profiles of candidate transit options. This paper describes an alternative bottom-up framework that uses second-by-second travel activity data to estimate total power consumption and related emissions for propulsion purposes with application to electric rail transit systems. The model was developed and calibrated with data from Portland, Oregon, and was supplemented with activity data from Chicago, Illinois. The results showed a predicted 1% to 8% difference in expected power consumption relative to estimates derived from the national transit database. In addition, the results highlighted how the speed profile, configuration of the train in number of cars, and mix of power generation sources could significantly vary emissions performance across different service routes. The developed framework can serve as an important tool for a transit planner or policy maker to evaluate the emissions performance of electric rail transit options. This framework has the advantage of relevance at both the network and project levels. At the project level, users can easily perform detailed sensitivity analysis on aspects of transit services such as vehicle and fuel technologies, passenger loading profiles, train size, and track profile. This framework gives transportation planners a flexible and efficient tool for emissions performance analysis.
http://dx.doi.org/10.3141/2428-02
http://scholar.google.com/scholar_lookup?title=Demonstrating+a+Bottom-Up+Framework+for+Evaluating+Energy+and+Emissions+Performance+of+Electric+Rail+Transit+Options&author=F.+Gbologah&author=Y.+Xu&author=M.+Rodgers&author=R.+Guensler&publication_year=2014

Author: Yang,Xia
Author: Sun,Zhanbo
Author: Ban,Xuegang (Jeff)
Author: Wojtowicz,Jeffrey
Author: Holguin-Veras,Jose

Urban Freight Performance Evaluation Using GPS Data

2014, 14p

Urban freight transportation is crucial to the quality of life which at the same time also produces significant externalities. This paper proposes procedures and methods of using second-by-second GPS data for urban freight performance evaluation. The evaluation targets on three important measures of urban freight activities, including mobility, fuel consumption, and emissions. Based on detailed GPS trajectories, the vehicle mobility can be characterized using measures such as the number of deliveries made, service times at delivery stops, and the trip segment travel time between delivery stops, and between delivery stops and the warehouse. The fuel consumption and emissions can also be estimated using micro-scale emission models. A case study is conducted using GPS data provided by a grocery company with chaining stores in the New York metropolitan area. The case study justifies the feasibility of using GPS data for freight performance evaluation. The results also reveal that certain innovative freight policies (such as off-hour deliveries) could help improve the efficiency of urban deliveries and reduce vehicle fuel consumption and emissions.

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Transportation Research Record: Journal of the Transportation Research Board, Transportation Research Board
Author: Paleti,Rajesh
Author: Bhat,Chandra,R
Author: Pendyala,Ram,M
Author: Goulias,Konstadinos,G
Author: Adler,Thomas,J
Author: Bahreinian,Aniss
Assessing the Impact of Transportation Policies on Fuel Consumption and Greenhouse Gas Emissions Using a Household Vehicle Fleet Simulator
ISSN: 9780309295185
2014, issue 2430, pp 182-190
The application of a comprehensive model system of vehicle fleet composition and evolution is described; this model system is capable of taking a base-year vehicle fleet and making it evolve over time in annual time steps through the events of vehicle disposal, replacement, and acquisition. The model system is sensitive to a host of socioeconomic, demographic, built environment, and vehicle technology and price variables; this sensitivity makes it ideally suited for such an application. Coupled with a demographic forecasting model system that causes the population to evolve over time, the vehicle evolution simulator is able to predict changes in vehicle fleet composition, miles of travel, fuel consumption, and greenhouse gas emissions under a wide range of scenarios. On the basis of the findings from this study, future technological innovations (e.g., increase of driving range) and pricing levels (doubling of gas cost) will have greater impacts on vehicle fleet composition, utilization, energy consumption, and greenhouse gas emissions than more incentive-based approaches such as free access to high-occupancy vehicle lanes for alternative-fuel vehicles.
http://dx.doi.org/10.3141/2430-19
http://scholar.google.com/scholar_lookup?title=Assessing+the+Impact+of+Transportation+Policies+on+Fuel+Consumption+and+Greenhouse+Gas+Emissions+Using+a+Household+Vehicle+Fleet+Simulator&author=R.+Paleti&author=C.+Bhat&author=R.+Pendyala&author=K.+Goulias&author=T.+Adler&author=A.+Bahreinian&publication_year=2014

Author: Zhou,Xuesong
Author: Lei,Hao
Author: Taylor,Jeffrey
Author: Liu,Bin
Author: Rouphail,Nagui,M
Author: Frey,H,Christopher
Integrating a Simplified Emission Estimation Model and Mesoscopic Dynamic Traffic Simulator to Efficiently Evaluate Emission Impacts of Traffic Management Strategies
2014, 17p
This paper presents a computationally efficient and theoretically rigorous dynamic traffic assignment (DTA) model and its solution algorithm for a number of emerging emissions and fuel consumption related applications that require both effective microscopic and macroscopic traffic stream representations. The proposed model embeds a set of consistent cross-resolution traffic state representation based on Newell's simplified kinematic wave and linear car following models. Tightly coupled with a computationally efficient emission estimation package MOVES Lite, a mesoscopic simulation-based dynamic network loading framework is adapted to evaluate traffic dynamics and vehicle emission/fuel consumption impact of different traffic management strategies.
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Transportation Research Record: Journal of the Transportation Research Board, Transportation Research Board
Author: Tipagornwong,Chawalit
Author: Figliozzi,Miguel
Analysis of Competitiveness of Freight Tricycle Delivery Services in Urban Areas
ISSN: 9780309295017
2014, issue 2410, pp 76-84
This research analyzed the competitiveness of freight tricycles, low-capacity freight delivery vehicles, as compared with diesel vans in urban areas. Freight tricycles, also known as electric-assisted trikes, are low-emission vehicles powered by a combination of human effort and an electric engine. This research developed a cost model that incorporated vehicle ownership and operation models as well as logistics constraints such as time windows, cargo capacity, fuel consumption, and energy use. Unlike previous research efforts, the model was tailored to the unique characteristics of freight tricycles and diesel van deliveries in urban areas. The model was used to analyze the competitiveness of freight tricycles against diesel-powered delivery vans. Cost breakeven points and elasticity for several vehicles and route-related variables were estimated. Results provided new insights on the last-mile delivery characteristics and logistical constraints that could affect tricycle competitiveness. Freight tricycle competitiveness was sensitive to urban policies and design variables such as on-street speed limits and parking policies. Tricycle competitiveness was also greatly affected by drivers' costs but barely affected by electricity or diesel costs. In contrast with the use of electric trucks, the competitiveness of tricycles was not driven by the value of the vehicles and their use.
http://dx.doi.org/10.3141/2410-09
http://scholar.google.com/scholar_lookup?title=Analysis+of+Competitiveness+of+Freight+Tricycle+Delivery+Services+in+Urban+Areas&author=C.+Tipagornwong&author=M.+Figliozzi&publication_year=2014

Author: Levin,Michael,W
Author: Jafari,Ehsan
Author: Shah,Rohan
Author: Ruiz-Juri,Natalia
Author: Mouskos,Kyriacos,C

A Dynamic Traffic Assignment Framework to Assess the Short-Term Network-Level Impacts of Eco-Routing Strategies

2014, 17p

This paper proposes a methodology to model the network-level impact of eco-routing policies using a Dynamic Traffic Assignment (DTA) platform. The DTA model is used to estimate recurrent traffic conditions based on Dynamic User Equilibrium (DUE) principles, and provides the inputs required to find feasible eco-routes for all origin-destination (OD) pairs in the network. A number of parametric tests are conducted on two networks (Austin, TX, and Nicosia, Cyprus) assuming that different fractions of drivers are re-routed into the corresponding eco-path. The simulation engine in the DTA package is used to assess the impact of the proposed policies and to compute fuel consumption. Future modeling efforts can easily incorporate CO2 emissions and other air-quality measures. Eco-routing schemes have recently been considered (and applied) due to advancements in In-vehicle navigation systems and real-time estimates of fuel consumption and greenhouse gas emissions. However, the network-level impacts of such strategies are not simple to predict. The use of DTA in the context of eco-routing allows studying very large areas which could not be modeled using other approaches. It also provides the means to compute a number of interesting performance metrics, including changes in distance traveled, average speed, and system travel time. These may lead to a more comprehensive understanding of the considered problem. Further, our modeling efforts suggest that in order to achieve system-level energy savings, fairly complex eco-routing strategies may be needed, particularly when long-term driver's behavior is considered. DTA models can be a powerful tool to develop and test such approaches.

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Proceedings of the Institution of Mechanical Engineers, Part M: Journal of Engineering for the Maritime Environment, Sage Publications, Incorporated
Author: Kanellos,Fotis,D
Author: Prousalidis,John,M
Author: Tsekouras,George,J
Control system for fuel consumption minimization-gas emission limitation of full electric propulsion ship power systems
2014/02, volume 228, issue 1, pp 17-28
Environmental pollution caused by ships' green house gas emissions and worldwide concern about air quality and oil supplies have led to stricter emissions regulations and fuel economy standards. In this regard, respective limits are set, while efforts to provide general guidelines for the achievement of economic and green ship operation with an urge to ship operators to apply them and return feedback. Also, specific design and operation indicators have been proposed in order to ensure compliance with new emissions regulations and fuel economy standards. Up to now, these indices are limited to ships comprising conventional propulsion systems, while full electric propulsion systems are not examined. In this article, an integrated control system that attains economically optimized and environmentally friendly operation is proposed. Moreover, appropriate reformulation of energy efficiency operation indicator is proposed for real-time assessment of gas emissions. The study is supported with the presentation of results obtained from the simulation of the operation of a ship power system comprising full electric propulsion.
http://dx.doi.org/10.1177/1475090212466523
http://pim.sagepub.com/cgi/content/abstract/228/1/17

Author: Nielsen,Eric
Author: Magnuson,George
Author: Kwok,George
Author: Peltier,Edward
Author: Chong,Oswald

Kansas Department of Transportation Enterprise Energy and Carbon Accounting and Utility Usage Research Phase 2B: Improving Energy and Fuel Efficiencies in KDOT Operations

2014/01 ,Final Report, 105p

Reducing the environmental impact of facilities and operations has become an important function for many organizations. In many cases, such as utility and fuel use, reducing these impacts can also be coupled to financial savings. The Kansas Department of Transportation (KDOT) has determined that conducting an energy and CO? audit of its building and vehicle fleets will aid in assessing KDOT energy use, prepare for any future regulations regarding CO? emissions, and help identify areas for increased savings through reduced use of commercial resources (primarily energy and fuel). Phase 1 of this project established baseline carbon and energy data from three major sources: the total energy embodied in the construction, operation and repair of KDOT-owned buildings, the total energy embodied in KDOT use of utilities (electricity, water and natural gas) and the energy expended in the operation of KDOT's vehicle fleet and other associated equipment. The work covered in this report (Phase 2) focused on streamlining and improving access to this information, improving KDOT's ability to track their data, and identifying areas for reducing expenditures on energy and fuel. Related Phase 2 work by Kansas State University to conduct energy audits of KDOT buildings is described separately in a report from that institution (published as K-TRAN KSU-12-5). Using the compiled data from Phase 1 of this project (site location, buildings, energy use, and building square footage), a web-based database was developed to manage information on the energy use and embodied energy of KDOT campuses and individual buildings. This database can be used to identify trends of campuses to find under-performing buildings, to aid in the tracking of high performance buildings, and also aid in verifying the upgrading of inefficient systems originally found by comparing the database with EIA baseline values. An operational energy use simulator (online at http://www2.ku.edu/~sims/cgi-bin/KDOT/index.php) was also developed for KDOT's long-term meter tracking use. This system can show energy use by the state, district, city, county, and zip code. Using these tools and compiled records from the Phase 1 survey, the authors developed recommendations for projects to improve KDOT's energy efficiency and sustainability. These projects include LED fluorescent bulb replacements, retrofitting and upgrading existing HVAC systems to demand-controlled ventilation (DCV) systems, the use of lower embodied energy materials in new building projects, and changes in employee habits to conserve energy. Fuel use by KDOT from fiscal years 2006-2011 was analyzed using a Microsoft Access database created to manage and analyze entries more effectively. Analysis of records provided by KDOT showed an overall decreasing trend in total miles traveled and fuel consumed over this time period, but an increase in diesel use over the past several years. It also found that replacing older vehicle models with new models does not show the expected increase in vehicle fleet efficiency across all major vehicle types in the fleet. This is most likely due to increases in engine capacity and fuel consumption for similar model vehicles over the past decade. Using more efficient means of transportation can significantly decrease KDOT fuel demand, in particular replacing truck travel with car travel where possible. The report also outlines specific advantages and disadvantages of more extensive biodiesel use to meet federal renewable fuel requirements, and recommends specific actions to address potential issues that could arise due to biodiesel compatibility problems with some materials and difficulties in cold weather operation.
http://idmweb.ksdot.org/PublicLib/publicDoc.asp?ID=003831956

PROMET-Traffic & Transportation, Sveuciliste U Zagrebu
Author: Hilmola,Olli-Pekka
Data Envelopment Analysis of Helsinki-Tallinn Transportation Chains
2013, volume 25, issue 6, pp 575-586
The Baltic Sea shipping is at a crossroads as sulphur regulation will lead to excessive cost increases from the year 2015 onwards and CO2 emission trading is planned to be implemented for the entire shipping sector within the EU area. Therefore, shipping is going to be minimized and hinterland transportation (road and rail) will act as substitute. This research analyzes the situation on one of the highest volume general cargo transportation routes of Finland (operating between Helsinki, Finland and Tallinn, Estonia), including loading and unloading at seaports and short sea shipping activity in between. Based on the efficiency evaluation results, it seems that containers should be favoured over semi-trailers - containers could be carried efficiently either in container ships or even at currently favoured roll on roll off (RoRo) or roll on roll off passenger (RoPax) ships. The authors' research illustrates that pure container shipping with larger container ships within the analyzed route is not entirely out of question, but lead time and hinterland operations should receive more attention. Alternatively, RoRo and RoPax ships can also do something to increase their competitiveness in environmental harm caused and diesel consumption - higher cargo loads and utilization levels are short-term key for continued dominance.
http://dx.doi.org/10.7307/ptt.v25i6.1196
http://www.fpz.unizg.hr/traffic/index.php/PROMTT/article/view/1196

Journal of Urban Planning and Development, American Society of Civil Engineers
Author: Delucchi,Mark
Author: Kurani,Kenneth,S
How to Have Sustainable Transportation without Making People Drive Less or Give Up Suburban Living
2014/12, volume 140, issue 4, Content ID 04014008
Motorized automobility and suburban living are not only highly valued but are also associated with a range of serious social problems, including deaths and injuries of motor-vehicle users and nonusers, roadway congestion, air pollution, dependence on insecure oil supplies, community fragmentation, and climate change. However, these problems, which make the present transportation and land-use system unsustainable, are not necessary consequences of automobility and suburban living per se, but rather are attributable mainly to the high kinetic energy of fast, heavy-motor vehicles (FHVs). Therefore, the challenge in creating a sustainable transportation and land-use system is to dramatically lower the kinetic energy of personal travel while retaining the advantages of personal motorized automobility and low-density development. The authors' approach is to redefine the technical artifact that is the conventional automobile and create two autonomous and universally accessible travel networks at a citywide scale: one for FHVs, the other for low-speed, low-mass modes including walking, cycling, and a new class of motor vehicles. In this paper, the authors motivate the need for this new urban-settlement and transportation-infrastructure scheme (USATIS), describe its design principles and features, review aspects of it in the literature and in the real world, present analyses covering a wide range of sustainability criteria-safety, mobility, congestion, environmental and energy-use impacts, urban aesthetics and community fragmentation, and economics-and discuss challenges for implementation and future research. The authors conclude that their USATIS does have the potential to support sustainable transportation without making people drive less or give up suburban living, but that before practical implementation plans can be considered, more research needs to be done on how people will adapt to the opportunities and constraints in the proposal.
http://dx.doi.org/10.1061/(ASCE)UP.1943-5444.0000172

Maritime Policy & Management, Taylor & Francis
Author: Woo,Jong-Kyun
Author: Moon,Daniel Seong-Hyeok
The effects of slow steaming on the environmental performance in liner shipping
2014/02, volume 41, issue 2, pp 176-191
The environment issue is one of the significant challenges that the liner shipping industry has to face. The International Maritime Organization (IMO) has set a goal to reduce greenhouse gas (GHG) emissions from existing vessels by 20-50% by 2050 and develop the Energy Efficiency Operational Indicator (EEOI) as a measure for energy efficiency. To achieve this goal, IMO has suggested three basic approaches: the enlargement of vessel size, the reduction of voyage speed, and the application of new technologies. In recent times, liners have adopted slow steaming and decelerated the voyage speed to 15-18 knots on major routes. This is because slow steaming is helpful in reducing operating costs and GHG emissions. However, it also creates negative effects that influence the operating costs and the amount of GHG emissions at the same time. This study started with the basic question: Is it true that as voyage speed reduces, the operating costs and CO? emissions can be reduced at the same time? If this is true, liners will definitely decelerate their voyage speed themselves as much as possible so that they can increase their profits and improve the level of environmental performance. However, if this is not true, then liners will concentrate just on increasing their profits by not considering environmental factors. This led the authors to set out three objectives: (1) to analyze the relationship between voyage speed and the amount of CO? emissions and to estimate the changes by slow steaming in liner shipping; (2) to analyze the relationship between voyage speed and the operating costs on a loop; and (3) to find the optimal voyage speed as a solution to maximize the reduction of CO? emissions at the lowest operating cost, thus satisfying the reduction target of IMO.
http://dx.doi.org/10.1080/03088839.2013.819131

Journal of Marine Technology and Environment, Constanta Maritime University
Author: Elena,Katelieva
Energy Efficiency Improvement of Ship Motor Driven Systems. High Efficient Motors and Drives
2013, volume 2, pp 25-32
The purpose of this paper is to show potential measures and practices for energy savings and to give recommendations for energy efficiency improvement of ship motor driven systems. For overall energy efficiency improvement of the ship is essential for companies to implement specific energy policy and to develop an energy management plan. As the motor driven systems are the largest energy consumer on ship optimization of the performance of these systems will provide greatest energy savings. For achieving efficiency optimization it is necessary to determine baseline data of the system, identify and implement the most appropriate measures and practices.
http://www.cmu-edu.eu/jmte/JMTE_vol_II_2013.pdf

World Review of Intermodal Transportation Research, Inderscience Enterprises Limited
Author: Bisen,Anand
Author: Verma,Prakash
Author: Chaube,Alok
Author: Jain,Rajeev
Mitigation of green house gases emission and energy consumption for transport sector: a fuzzy-AHP approach
2013, volume 4, issue 4, pp 280-299
The green house gas emission has sharply increased in the past several decades from transport sector. The policy options in transportation sector primarily focus on the reduction of green house gas emission through the reduction of underlying activity (i.e., travel). Several transportation sector policies have been proposed in the literature. In order to examine relative importance of these policies, a fuzzy-analytic hierarchy process (AHP) approach has been used. This facilitates the choice of viable policies to mitigate green house gas emission from the transport sector. The analysis indicated that the policy applying an integrated model of transport planning and land use pattern change is the policy of prime importance. Further there is an exigency for development of advanced information technology for transport sector in the present scenario.
http://dx.doi.org/10.1504/WRITR.2013.059856
http://inderscience.metapress.com/link.asp?target=contribution&id=N174037331G032N6

Journal of Transport Geography, Elsevier
Author: Horner,Mark,W
Exploring the linkages between transportation, urban form, and energy
2013/12, volume 33, pp 207-209
Accounting for and understanding the interrelationships between land use and transportation outcomes remains a key focus of research. Achieving greater understandings of these connections creates the possibility to address many problems that make transportation systems unsustainable. It is thus important to explore the links between transportation, urban form, and energy use. This special section in this issue of the Journal of Transport Geography attempts to do so with seven papers that reflect these issues by examining urban planning initiatives, household energy use, land use and emissions, equity among urban residents, landscape and driving behavior, alternative fuel vehicle drivers, and inter-city transit planning.
http://dx.doi.org/10.1016/j.jtrangeo.2013.09.009
http://www.sciencedirect.com/science/article/pii/S0966692313001786

Journal of Transport Geography, Elsevier
Author: Tirumalachetty,Sumala
Author: Kockelman,Kara,M
Author: Nichols,Brice,G
Forecasting greenhouse gas emissions from urban regions: microsimulation of land use and transport patterns in Austin, Texas
2013/12, volume 33, pp 220-229
Policymakers, planners, engineers, and others seek effective ways to anticipate and manage greenhouse gas (GHG) emissions for a sustainable future. Here, a microsimulation model was developed to demonstrate how one can forecast Austin's demographic and firmographic attributes over time, using a variety of national and local, aggregate and disaggregate data sets. Year 2030 household energy demands and GHG emissions estimates are compared under five different land use and transport policy scenarios. Application of an urban growth boundary provided the lowest increase in overall vehicle miles traveled (VMT) and GHG emissions, while network additions resulted in the highest rates of increase. Average energy consumption per household are estimated to fall over time (by 11-19% depending on the scenario), but the region's overall energy consumption is estimated to increase dramatically - by nearly 88% in terms of home energy consumption (in the base scenario) and 108% in the transport sector, relative to the 2005 base-year scenario. Such increases are considerably higher than proposed GHG targets, presenting a serious energy and emissions challenge for Austin as well as other U.S. regions.
http://dx.doi.org/10.1016/j.jtrangeo.2013.08.002
http://www.sciencedirect.com/science/article/pii/S0966692313001385

Journal of Transport Geography, Elsevier
Author: Modarres,Ali
Commuting and energy consumption: toward an equitable transportation policy
2013/12, volume 33, pp 240-249
Like other major metropolitan areas, the urban complex that extends from Los Angeles to Orange County faces numerous transportation challenges. Daily traffic congestion, reduced productivity and loss of income, air pollution, environmental degradation and significant energy consumption are only a few outcomes of the millions of miles traveled every day on the region's highways and streets. An important response to this significant urban challenge has been the desire for further expansion of an efficient public transportation network and increasing densities in particular areas within the larger metropolitan region. In this paper, the authors estimate the current energy consumption patterns in various communities, arguing that policy attempts to achieve higher density and better jobs-housing balance should fully consider the social geography of our metropolitan areas and their close relationship with energy consumption patterns.
http://dx.doi.org/10.1016/j.jtrangeo.2013.09.005
http://www.sciencedirect.com/science/article/pii/S0966692313001749

IATSS Research, Elsevier
Author: Kii,Masanobu
Author: Akimoto,Keigo
Author: Doi,Kenji
Measuring the Impact of Urban Policies on Transportation Energy Saving using a Land Use-transport Model
2014/03, volume 37, issue 2, pp 98-109
Various projects all over the world are attempting to build smart cities in hopes of achieving energy-efficient and livable communities, but most of them are aiming to fulfill their goals technologically. However, the energy efficiency and livability of a city are affected by not only these technological factors but also urban structures that encompass residential areas, offices, transportation networks, and other facilities. Urban policies intervene in transportation and land-use conditions and thereby change how citizens consume energy and go about their daily lives as the actors in the urban system alter their behavior. This means that energy efficiency and quality of life share close ties. Assessments of urban policies thus need to consider the reactions of actors to the intervention. This study demonstrates the applicability of a land-use transport model to the assessment of urban policies for building smart communities. First, the authors outline a model that explicitly formulates the actors' location-related decisions and travel behavior. Second, the authors apply this model to two urban policies - road pricing and land-use regulation - to assess their long-term impact on energy saving and sustainability using the case of a simplified synthetic city. The authors study verifies that, under assumed conditions, the model has the capacity to assess urban policies on energy use and sustainability in a consistent fashion.
http://dx.doi.org/10.1016/j.iatssr.2014.03.002
http://www.sciencedirect.com/science/article/pii/S038611121400003X

Constanta Maritime University Annals, Constanta Maritime University
Author: Feiza,Memet
Algorithm for the Analysis of Transportation Sector on Energy and Exergy Basis
2013, volume 20, pp 83-86
In the international effort of achieving sustainability in transport, it is stated that transportation sector is one of the most rapidly growing energy consumer. The aim of this article is to present an algorithm for the analysis of a transportation sector which consists of different subsectors, by the use of energy and exergy concepts in order to reveal energy efficiency of this sector. Energy and exergy efficiencies, calculated according to the algorithm (for different period of time) are strong tools in hands of policy makers when it is aimed the improvement of this sector. Such an analysis can reveal less performant sub-sectors from a transportation sector, presented methodology allowing also the comparison of transportation sectors from different countries.
http://www.cmu-edu.eu/anale/anale/2014-vol20/Volumul_20.pdf

Constanta Maritime University Annals, Constanta Maritime University
Author: Gratiela,Branza
Sustainable Consumption in the Area of Transportation
2013, volume 20, pp 209-212
In the context in which sustainable development is one of the key objectives of the European Union, the need to develop and evolve towards more sustainable consumption and production patterns is a priority. Due to the fact that in the European Union and in the world the consumption sector related to food, housing and transport represents between 70% to 80% of all environmental impacts, promoting sustainable consumption is extremely important to limit negative environmental and social externalities as well as to provide markets for sustainable products. This paper captures some aspects regarding the definition of sustainable consumption and guidelines in the sphere of education for sustainable consumption. The paper also presents some good practice examples of sustainable consumption in the field of transportation and an efficient tool to measure consumer behaviour in the area of sustainable consumption in transportation - Greendex score.
http://www.cmu-edu.eu/anale/anale/2014-vol20/Volumul_20.pdf

Constanta Maritime University Annals, Constanta Maritime University
Author: Acomi,Nicoleta
Author: Acomi,Ovidiu
Steps towards the energy efficient ship
2013, volume 19, pp 17-20
It is well known that air pollution is a serious and actual problem that affects society. The maritime transport is responsible for a part of that pollution, approximately for 10% of the greenhouse gases emissions of the transport sector. In order to reduce greenhouse gas emissions from international shipping, the Marine Environment Protection Committee (MEPC) from the International Maritime Organization developed technical and operational measures, helping to improve in the same time the fuel efficiency too. The measures have been reviewed by the Committee in a number of sessions and the results were the concepts of Energy Efficiency Design Index (EEDI), Energy Efficiency Operational Index (EEOI) and Ship Energy Efficiency Management Plan (SEEMP). They have also elaborated a model course comprising the main factors that should be well known and adjusted for an energy efficient ship. The aims of this study are to offer an overview of the proposed measures, to emphasize their technical implications and also the operational requirements that have been set in the maritime field regarding the marine environment.
http://www.cmu-edu.eu/anale/anale/2013-vol19/Volumul_19.pdf

Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit, Sage Publications Limited
Author: Sun,Yan
Author: Cole,Colin
Author: Spiryagin,Maksym
Author: Godber,Tony
Author: Hames,Stewart
Author: Rasul,Mohammad
Longitudinal heavy haul train simulations and energy analysis for typical Australian track routes
2014/05, volume 228, issue 4, pp 355-366
Computer simulations are utilised to study the energy used by heavy haul trains and the amount of energy that can be generated from dynamic braking of these trains; these studies allow the potential for the application of hybrid locomotives to be evaluated. An in-house written software package is used to perform simulations on the energy balance between energy usage and the energy generated from dynamic braking for heavy haul operations on two typical track routes in Australia. The simulation results show that the energy generated from dynamic braking can contribute up to 30% of the energy used in locomotive traction. Detailed analyses show that the locomotives can operate at an average power that is much less than full power, and an energy hybridisation potential factor is defined, with the maximum factor reaching a value of 63%. This factor indicates the considerable potential for using hybrid locomotive traction in heavy haul applications.
http://dx.doi.org/10.1177/0954409713476225
http://pif.sagepub.com/cgi/content/abstract/228/4/355

IEEE Transactions on Intelligent Transportation Systems, Institute of Electrical and Electronics Engineers (IEEE)
Author: Zhang,Lijun
Author: Zhuan,Xiangtao
Braking-Penalized Receding Horizon Control of Heavy-Haul Trains
2013/12, volume 14, issue 4, pp 1620-1628
Incorporated with a receding horizon control (RHC) approach, a penalty method is proposed for reducing the energy wasted by braking in the operation of a heavy-haul train. The practical nonlinear model of the train is linearized to design the RHC controller. This controller is then applied to the practical nonlinear dynamics of the train, and its performances are analyzed. In particular, the main focus of this paper is on the impact of the brake penalty on the train's performances. Meanwhile, a fence method is presented to tackle two issues. The first issue is that all the cars in a train cannot be individually controlled due to a limit on the available transmission channels for control systems in a long train. The other issue is that the RHC approach suffers from heavy computation and memory load. Simulations verified that the brake penalty presented in the design can remarkably reduce the energy consumption and in-train forces of a train without sacrificing the velocity tracking performance of the train. Simulations also verified that the fence method is essential to reducing the related computation load when the RHC approach is applied to a long heavy-haul train. Further, it is demonstrated that the fence method can effectively shorten computation time and reduce memory usage without severely jeopardizing the performance of a train.
http://dx.doi.org/10.1109/TITS.2013.2263532

Author: Han,Fei
Author: Cheng,Lin
An Optimization Method of Transportation Network Design Based on the Concept of Sustainable Development
ISSN: 9780784413364
2014/05, pp 90-95
Traffic congestion, energy shortcoming and environment pollution are nowadays the common problems faced by many metropolises and which have severely restricted the further development of these cities. Therefore, the sustainable development of an urban transportation system has aroused more and more attention. Based on this background, this paper attempts to investigate the transportation network design problem from the perspective of sustainable development, and focuses on the impacts of road broadening on total travel time, total fuel consumption, and total vehicular emission at the network level. The authors integrate these three indicators into a sustainable development index, and then establish the corresponding bi-level optimization model. The upper level problem is to maximize the sustainable development index from the viewpoint of traffic managers, and the lower level problem is to depict travelers' route choice behavior based on user equilibrium (UE) theory. Finally, the genetic algorithm is used to solve the bi-level model. The numerical example shows that the model and algorithm are feasible and can be taken as a basis for the related research.
Conference: 10th Asia Pacific Transportation Development ConferenceInternational Chinese Transportation Professionals AssociationBeijing University of TechnologyAmerican Society of Civil EngineersBeijing,China StartDate:20140525 EndDate:20140527 Sponsors:International Chinese Transportation Professionals Association, Beijing University of Technology, American Society of Civil Engineers
http://dx.doi.org/10.1061/9780784413364.012

Transportation Letters: The International Journal of Transportation Research, J. Ross Publishing
Author: Kim,Jae-Gon
Author: Kim,Hwa-Joong
Author: Lee,Paul,Tae-Woo
Optimizing ship speed to minimize fuel consumption
2014, volume 6, issue 3, 109-117
Owing to high fuel costs and environmental regulations, the optimization of ship speed to minimize fuel consumption and reduce carbon emissions has become a hot issue in the maritime industry. In this paper, the authors study the sailing speed optimization problem for a ship operating on a route having a specified sequence of calling ports with time windows for calling time. The considered problem can be formulated as a non-linear program. They derive the intrinsic properties of the problem and develop an optimal algorithm based on the properties. Computational experiments show that the developed algorithm in this paper is efficient in finding an optimal solution.
http://dx.doi.org/10.1179/1942787514Y.0000000016
http://www.maneyonline.com/doi/abs/10.1179/1942787514Y.0000000016

Author: Graindorge,Tatiana
Author: Breuil,Dominique France
Evaluation of the Urban Freight Transportation (UFT) Projects
2014/04, 10p
This paper describes the concept of Delivery and Servicing Plans (DSPs) in the context of urban freight transport (UFT). DSPs are key strategy documents outlining how an organisation will deal with its need to generate freight transport efficiently, safely and in sustainable way. From the review of the state-of-art in evaluation for transportation projects, it was possible to highlight the main principles of UFT evaluation and the difficulties to implement it. Four DSP measures evaluated in the European Union (EU) funded TRAILBLAZER (Transport And Innovation Logistics by Local Authorities with a Zest for Efficiency and Realization) project show the impacts of the measures on energy consumption and CO? emissions and key findings concerning the evaluation approach.
Conference: Transport Research Arena (TRA) 5th Conference: Transport Solutions from Research to DeploymentEuropean CommissionConference of European Directors of Roads (CEDR)European Road Transport Research Advisory Council (ERTRAC)WATERBORNE??European Rail Research Advisory Council (ERRAC)Institut Francais des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux (IFSTTAR)Ministère de l'Écologie, du Développement Durable et de l'ÉnergieParis,France StartDate:20140414 EndDate:20140417 Sponsors:European Commission, Conference of European Directors of Roads (CEDR), European Road Transport Research Advisory Council (ERTRAC), WATERBORNE??, European Rail Research Advisory Council (ERRAC), Institut Francais des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux (IFSTTAR), Ministère de l'Écologie, du Développement Durable et de l'Énergie
http://tra2014.traconference.eu/papers/pdfs/TRA2014_Fpaper_18508.pdf

Author: Luo,Linna
Author: Wang,Zhuoyu
Author: Yin,Yanhong
Simulation of the Effect of Transport Policy on Energy Consumption Based on a Microeconomic Model
ISSN: 9780784413623
2014/06, pp 2919-2929
This paper examines the effect of transport policy on individual energy consumption by use of a microeconomic model. The energy consumption is estimated based on individual consumption behaviors explained by the demand of goods on the maximum utility (composite goods, car trips, and mass transit trips). The authors simulate the effect of a transport pricing policy on energy consumption in the Kumamoto metropolitan region. Five scenarios related to gasoline tax adding and mass transit fare reduction are set and simulated. Less energy consumption is found in the result of the higher gasoline tax adding scenario. A policy of mass transit fare reduction shows very limited effect on energy consumption reduction.
Conference: 14th COTA International Conference of Transportation ProfessionalsChinese Overseas Transportation Association (COTA)Central South UniversityTransportation Research BoardInstitute of Transportation Engineers (ITE)American Society of Civil EngineersChangsha,China StartDate:20140704 EndDate:20140707 Sponsors:Chinese Overseas Transportation Association (COTA), Central South University, Transportation Research Board, Institute of Transportation Engineers (ITE), American Society of Civil Engineers
http://dx.doi.org/10.1061/9780784413623.280

Author: Rodríguez,Txomin
Author: Urquiza,Arkaitz
Author: Klunder,Gerdien,A France
The Amitran Project Contribution to the Validation of Methodologies for Assessment of Intelligent Transport Systems
2014/04, 10p
The Amitran project develops a methodology for a systematic assessment of the effects that Intelligent Transport Systems (ITS) produce on energy efficiency and CO? emissions. Amitran will provide developers, public authorities and investors in the field of ITS with a methodology and tools to make decisions based on reliable impact estimates. By doing so, it will contribute to the development of ITS solutions that allow for more efficient multimodal transport of goods and passengers. In the last stage of the Amitran project, a validation of the resulting methodology is carried out. The description of the "validation methodology for the Amitran methodology" is the object of this paper. The proposed validation methodology for Amitran is inspired in a well known and frequently used methodology for the development and realisation of ITS referred to as the V-model and in FESTA (FESTA, 2011), a methodology for the evaluation of Field Operational Tests and adapted to the fact of Amitran being a methodology. Amitran's validation methodology includes assessing the stakeholders' needs and the expected technical and socio-economic impacts for ITS. The validation methodology for Amitran goes through three different stages: definition, testing and evaluation.
Conference: Transport Research Arena (TRA) 5th Conference: Transport Solutions from Research to DeploymentEuropean CommissionConference of European Directors of Roads (CEDR)European Road Transport Research Advisory Council (ERTRAC)WATERBORNE??European Rail Research Advisory Council (ERRAC)Institut Francais des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux (IFSTTAR)Ministère de l'Écologie, du Développement Durable et de l'ÉnergieParis,France StartDate:20140414 EndDate:20140417 Sponsors:European Commission, Conference of European Directors of Roads (CEDR), European Road Transport Research Advisory Council (ERTRAC), WATERBORNE??, European Rail Research Advisory Council (ERRAC), Institut Francais des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux (IFSTTAR), Ministère de l'Écologie, du Développement Durable et de l'Énergie
http://tra2014.traconference.eu/papers/pdfs/TRA2014_Fpaper_18447.pdf

PATH Research Report, University of California, Berkeley
Author: Skabardonis,Alexander
Author: Shladover,Steven
Author: Zhang,Wei-bin
Author: Zhang,Liping
Author: Li,Jing-Quan
Author: Zhou,Kun
Author: Argote,Juan
Author: Barth,Matthew
Author: Boriboonsomsin,Kanok
Author: Xia,Haitao
Author: Winckler,Andreas
Author: Liccardo,Darren,S

Advanced Traffic Signal Control Algorithms

2013/09 ,Final Report, 123p

Advanced signal control strategies, based on real-time information on vehicles' location, speed and characteristics as well as communication to the signal control infrastructure, can enhance mobility, safety, and the environment. Several performance measures are proposed for evaluating signal control algorithms, and procedures for estimating the performance measures from connected vehicle data are developed using statistical techniques and kinematic wave theory. A number of control strategies are developed and tested through simulation to improve mobility: queue spillback avoidance, control for congested networks, and dynamic lane allocation. Results indicate that the proposed strategies improve traffic performance. Strategies for improving intersection safety with emphasis on avoidance of red light running (RLR) related collisions are also developed. A prototype in-vehicle driver speed advisory system for minimum fuel consumption and emissions is developed and field tests show significant fuel savings.

http://www.dot.ca.gov/newtech/researchreports/reports/2013/final_report_task_2157a.pdf
https://merritt.cdlib.org/d/ark%3A%2F13030%2Fm5nc7fc1/2/producer%2F884613548.pdf
https://merritt.cdlib.org/d/ark%3A%2F13030%2Fm5s4865n/1/producer%2F884614370.pdf

Marine Technology Society Journal, Marine Technology Society
Author: Yuankui,Li
Author: Yingjun,Zhang
Author: Feixiang,Zhu
Minimal Time Route for Wind-Assisted Ships
2014/05, volume 48, issue 3, pp 115-124
As a result of a global call for energy-saving and emission-reduction strategies as well as an urgent need to reduce the shipping cost of transoceanic crossings, this paper proposes a route that minimizes the time for such crossings and provides technical support to efficiently utilize wind power based on existing research for wind-assisted ships. To begin, the ocean winds around the ship route were analyzed, and the different influences on traditional ships and wind-assisted ships were listed for various wind speeds and directions. The number of waypoints of a route was subsequently calculated, and a model of the optimal ship route was then built based on the fixed power output of the main marine engine. A solution algorithm based on simulated annealing was then presented to determine the optimal wind-assisted ship routes by minimizing the travel time. Finally, a 76,000-DWT wind-assisted cargo ship was designated as the experimental ship, and the optimization model and its algorithm were simulated to generate an optimized wind-assisted route. The simulation indicated that the speed of a ship equipped with wind propulsion increases, which significantly reduces the travel time and fuel costs over the optimized route, despite the increased distance of this route. Thus, the route optimization algorithm designed in this study can be applied to optimize the routes for wind-assisted ships and theoretically guide further studies of wind-assisted projects.
http://dx.doi.org/10.4031/MTSJ.48.3.2
http://www.ingentaconnect.com/content/mts/mtsj/2014/00000048/00000003/art00011

Transportation Research Part C: Emerging Technologies, Elsevier
Author: Psaraftis,Harilaos,N
Author: Kontovas,Christos,A
Ship speed optimization: Concepts, models and combined speed-routing scenarios
2014/07, volume 44, pp 52-69
The purpose of this paper is to clarify some important issues as regards ship speed optimization at the operational level and develop models that optimize ship speed for a spectrum of routing scenarios in a single ship setting. The paper's main contribution is the incorporation of those fundamental parameters and other considerations that weigh heavily in a ship owner's or charterer's speed decision and in his routing decision, wherever relevant. Various examples are given so as to illustrate the properties of the optimal solution and the various trade-offs that are involved.
http://dx.doi.org/10.1016/j.trc.2014.03.001
http://www.sciencedirect.com/science/article/pii/S0968090X14000667

Transportation Research Part D: Transport and Environment, Elsevier
Author: Cui,Qiang
Author: Li,Ye
The evaluation of transportation energy efficiency: An application of three-stage virtual frontier DEA
2014/06, volume 29, pp 1-11
In this paper, transportation energy efficiency is newly defined and its inputs and outputs are obtained through literature review. Labor input, capital input and energy input are selected as the inputs, passenger turnover volume and freight turnover volume are defined as the outputs. A new model-three-stage virtual frontier three-stage virtual frontier Data Envelopment Analysis (DEA) is proposed to evaluate transportation energy efficiencies. The case of thirty Chinese PARs (provincial administrative regions) from 2003 to 2012 is applied to verify its rationality. In the three-stage virtual frontier DEA, the reference decision-making unit (DMU) set and the evaluated DMU set are two different sets so that it can distinguish the DEA efficient DMUs. And in the evaluating process, the reference DMU set remains unchanged to assure its results more reasonable than Super DEA model. The results show that transport structure and management measures have important impacts on transportation energy efficiency.
http://dx.doi.org/10.1016/j.trd.2014.03.007
http://www.sciencedirect.com/science/article/pii/S1361920914000236

Author: Langer,Therese
Author: Vaidyanathan,Shruti
Smart Freight: Applications of Information and Communications Technologies to Freight System Efficiency
2014/07, 29p
This paper focuses on the energy savings potential of information and communications technology (ICT) as applied to freight transportation. It identifies savings that can be realized by reducing miles traveled, improving the efficiency of freight networks, and maximizing freight vehicle operations. Case studies are included of companies using ICT to reduce emissions and conserve fuel. Barriers to implementation are reviewed, recommendations made, and the role of public policy is examined.
http://www.aceee.org/files/pdf/white-paper/smart-freight-ict.pdf

Indian Highways, Indian Roads Congress
Author: Behera,Jyotirmaya
Towards development of intelligent transport system for control of traffic management in Indian cities
2014/06, volume 42, issue 6, pp 75-86
This paper demonstrates the necessity of intelligent transportation systems (ITS) infrastructure in different cities in India for traffic control management and to tackle the rising menace of road accidents and fatalities. As the number of vehicles increases every day on Indian roads, the average motorist spends hours in traffic jams, which leads to billions of rupees wasted every year. New technology, such as loop detectors, red light cameras, electronic display signs, and parking control systems are explained with various benefits. ITS maximize the capacity of infrastructure, reducing the need to build additional highway capacity. For example, applying real-time traffic data to traffic signal lights can improve traffic flow significantly, reducing stops by as much as 40 percent, reducing travel time by 25 percent, cutting fuel consumption by 10 percent, and thereby reducing carbon emissions.

Transportation Research Part A: Policy and Practice, Elsevier
Author: Agnolucci,Paolo
Author: Smith,Tristan
Author: Rehmatulla,Nishat
Energy efficiency and time charter rates: Energy efficiency savings recovered by ship owners in the Panamax market
2014/08, volume 66, pp 173-184
This paper presents the first analysis on how financial savings arising from energy efficient ships are allocated between owners and those hiring the ships. This is an important undertaking as allocation of financial savings is expected to have an impact on the incentives faced by ship owners to invest in more energy efficient vessels. The authors focus on the dry bulk Panamax segment as it contributes to around 50 Mt (5%) of total CO? emissions from shipping in 2007 and therefore its importance in terms of environmental impact should not be neglected. The time charter market represents a classical example of the principal-agent problem similar to the tenant-landlord problem in the buildings sector. The authors discovered that on average only 40% of the financial savings delivered by energy efficiency accrue to ship owner for the period 2008-2012. The finding that only part of the savings are recouped by shipowners affecting their incentives towards energy efficiency could consequently have implications on the type of emission reduction policies opted at both, global and regional levels.
http://dx.doi.org/10.1016/j.tra.2014.05.004
http://www.sciencedirect.com/science/article/pii/S0965856414001189

Author: Morello,E
Author: Toffolo,S
Author: Magra,G France
Traffic models enhancements for properly assess environmental impacts of ITS/ICT systems: generalities and eco-driving example
2014/04, 10p
The paper focus on the enhancements needed in traffic simulation models to properly assess vehicle energy consumption and CO2 emissions when several innovative ITS and ICT systems are implemented. Examples of these are the Advanced Driver Assistance System (ADAS) and Eco-Driving applications. The implementations of certain ITS systems not only affects the overall traffic performance but also influences the vehicle dynamic and/or driver attitude, leading to different results in terms of energy consumption depending on the way in which the differences in behaviour have been modelled. The study here presented some details on the vehicle/driver behaviour which has led to some refinements of the car-following mathematical models.
Conference: Transport Research Arena (TRA) 5th Conference: Transport Solutions from Research to DeploymentEuropean CommissionConference of European Directors of Roads (CEDR)European Road Transport Research Advisory Council (ERTRAC)WATERBORNE??European Rail Research Advisory Council (ERRAC)Institut Francais des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux (IFSTTAR)Ministère de l'Écologie, du Développement Durable et de l'ÉnergieParis,France StartDate:20140414 EndDate:20140417 Sponsors:European Commission, Conference of European Directors of Roads (CEDR), European Road Transport Research Advisory Council (ERTRAC), WATERBORNE??, European Rail Research Advisory Council (ERRAC), Institut Francais des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux (IFSTTAR), Ministère de l'Écologie, du Développement Durable et de l'Énergie
http://tra2014.traconference.eu/papers/pdfs/TRA2014_Fpaper_19868.pdf

Author: Strömberg,H,K
Author: KARLSSON,M France
Eco-driving in a public transport context: experiences from a field trial
2014/04, 10p
Many public transport vehicles, buses in particular, produce emissions with a negative impact on the environment. An eco-driving style can reduce fuel use and emission up to 25%. In a field trial the effects of two intervention programmes were compared. Fifty-four drivers on one bus line were divided into three groups: one received feedback from an in-vehicle system, one received the same feedback and personal training and one group acted as a control. An overall fuel saving of 6.8% was found, as well as large decreases in instances of harsh deceleration and speeding. However, no difference between the two interventions could be found. The drivers reported increased theoretical knowledge but several contextual factors were found to obstruct their opportunity to actually practise eco-driving. The study demonstrates the importance to differentiate between a driver's ability (e.g. knowledge, skill, and habits) and a driver's opportunity to eco-drive (e.g. work tasks, traffic situation). Current interventions focus on the driver's ability without taking opportunity into consideration.
Conference: Transport Research Arena (TRA) 5th Conference: Transport Solutions from Research to DeploymentEuropean CommissionConference of European Directors of Roads (CEDR)European Road Transport Research Advisory Council (ERTRAC)WATERBORNE??European Rail Research Advisory Council (ERRAC)Institut Francais des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux (IFSTTAR)Ministère de l'Écologie, du Développement Durable et de l'ÉnergieParis,France StartDate:20140414 EndDate:20140417 Sponsors:European Commission, Conference of European Directors of Roads (CEDR), European Road Transport Research Advisory Council (ERTRAC), WATERBORNE??, European Rail Research Advisory Council (ERRAC), Institut Francais des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux (IFSTTAR), Ministère de l'Écologie, du Développement Durable et de l'Énergie
http://tra2014.traconference.eu/papers/pdfs/TRA2014_Fpaper_18451.pdf

Proceedings of the Institution of Mechanical Engineers, Part M: Journal of Engineering for the Maritime Environment, Sage Publications, Incorporated
Author: Coraddu,Andrea
Author: Figari,Massimo
Author: Savio,Stefano
Numerical investigation on ship energy efficiency by Monte Carlo simulation
2014/08, volume 228, issue 3, pp 220-234
In this article, the authors present a procedure to predict the energy efficiency operational indicator by Monte Carlo simulations, estimating the total ship fuel consumption as a function of displacement and speed considered as random variables. To characterize the probability density function of displacement and speed, a complete series of operating data concerning 2 years of navigation, of a RoPax engaged in a commercial trade in the Mediterranean Sea, were collected and used.
http://dx.doi.org/10.1177/1475090214524184
http://pim.sagepub.com/cgi/content/abstract/228/3/220

Author: Koshizen,Takamasa
Author: Koike,Hiroyuki
Fuel Economy due to Traffic Congestion Detector using Smartphone
ISSN: 9784990493981
2013, 10p
The world's first technology using a smartphone application (app) had been put by Honda's press-release, in respect of detecting traffic congestion. The authors' smartphone app works by tracking several driving patterns such as acceleration and deceleration. This idea behind it is that drivers are often not able to keep the same speed or distance between their vehicles and the other vehicle in front of them. It is called as 'inharmonious (disorder)' driving patterns, and which leads to a butterfly effect of late reactions between vehicles. The flow of traffic is then broken up. In summary, the authors' smartphone app detects inharmonious traffic pattern in real time. Hence, it can provide a notification (warning) for drivers, in order to change their driving patterns to ease traffic. Theoretically, detecting congestion technology is dedicated from 1/f fluctuations (spectra) regarding driver's acceleration or deceleration behavior. When their fluctuations is large the probability of traffic congestion is increased, and vice versa. This paper describes fuel economy using the authors' app in terms of minimizing the possibility of traffic congestion.
Conference: 20th ITS World CongressITS JapanTokyo,Japan StartDate:20131014 EndDate:20131018
Sponsors:ITS Japan

Author: Czogalla,Olaf
Author: Herrmann,Andreas
Estimation of Vehicle Emissions of Improved Traffic Management Performance using Microsimulation
ISSN: 9784990493981
2013, 11p
The reduction of climate relevant gases such as carbon dioxide constitutes a major target of local policies of numerous cities within the European Union. The central German city of Magdeburg seeks for a significant reduction of emissions until 2050. Traffic and transport account for approximately 30 percent of total emissions. In this respect there exist a considerable potential of dedicated traffic management improvements to contribute to a substantial reduction of energy consumption and tailpipe emissions. Selected improvements of traffic management performance including traffic control optimization of single intersections and coordinated signalization have been investigated using micro-simulation models for their capability to reduce energy and emissions. To estimate emission reductions internal emission models of Transportation Analysis and Simulation System (TRANSIMS) have been calibrated and applied to conditions of the modeled urban network and vehicle emission rates.
Conference: 20th ITS World CongressITS JapanTokyo,Japan StartDate:20131014 EndDate:20131018
Sponsors:ITS Japan

Author: Vreeswijk,Jaap
Author: Barth,Matthew
European and United States Scenarios for Energy Efficient Traffic Signal Operations
ISSN: 9784990493981
2013, 9p
Energy efficient traffic signal operations include the use of connected vehicle technologies to reduce fuel consumption, as well as greenhouse gas and criteria air pollutant emissions on roadway arterials by reducing idling, reducing the number of stops, reducing unnecessary accelerations and decelerations, and improving traffic flow at signalized intersections. The EU-US task force on ITS cooperation has recently convened a working group for sustainability applications, aiming to research sustainable traffic operational scenarios. One of the key goals is to define the scope of sustainable ITS applications and assess commonalities and differences in message sets, data transmission techniques, and system algorithms. This paper describes a general structure of operational scenarios based on increasing level of complexity with regard to traffic signal timing algorithms and use of communication technologies. Implications for the application use cases of eco-traffic signal timing, eco-traffic signal priority, and eco-approach and departure at signalized intersections are described.
Conference: 20th ITS World CongressITS JapanTokyo,Japan StartDate:20131014 EndDate:20131018
Sponsors:ITS Japan

ITS International, Route One Publishing Limited
Author: Crawford,David
Smoothing out city freight movements
2014/05, volume 20, issue 3, pp 43-44
Urban freight movement can be a difficult logistics issue. Freight traffic in urban areas accounts for a significant portion of the overall traffic, as well as the emissions and fuel consumed. A plan for improving freight issues in urban areas is to establish freight consolidation centers (FCC), which improve the management of freight access. Heavy trucks can unload at a FCC, and vehicles that are more environmentally-friendly and add less to traffic congestion can transport goods into cities. At present, there are 115 FCCs in operation, mostly in Europe.
http://www.itsinternational.com/categories/travel-information-weather/features/smoothing-out-city-freight-movements/

IEEE Transactions on Intelligent Transportation Systems, Institute of Electrical and Electronics Engineers (IEEE)
Author: Gu,Qing
Author: Tang,Tao
Author: Cao,Fang
Author: Song,Yong-duan
Energy-Efficient Train Operation in Urban Rail Transit Using Real-Time Traffic Information
2014/06, volume 15, issue 3, pp 1216-1233
Energy-efficient train operation represents an important issue for daily operational urban rail transit. Most energy-efficient train operation strategies are normally planned according to a timetable, which is designed by offline traffic information. In this paper, a new energy-efficient train operation model based on real-time traffic information is proposed from the geometric and topographic points of view through a nonlinear programming method, leading to an energy-efficient driving strategy with real-time interstation running time monitored by the automatic train supervision system. The novelty of this work lies not only in the establishment of a new model for energy-efficient train operation but also in the utilization of combining analytical and numerical methods for deriving energy-efficient train operation strategies. More specifically, the energy-efficient operation model is built based on trajectory analysis when the energy-efficient optimal controls are applied, from which an energy-efficient reference trajectory is obtained under the running time and distance constraints, in which the nonlinear programming method is utilized. In contrast to most existing methods, the proposed model turns out to be a small-scale problem, and the difficulties of solving partial differential equations or the process of predetermining and reiteratively calculating some key factors as traditionally involved are avoided. Thus, it is more feasible to implement the strategy and easier to make real-time adjustment if needed. The comparative analysis and the simulation verification with the actual operating data confirm the effectiveness of the proposed method. With the proposed method, some delayed trains are able to maintain punctuality at the next station and sometimes even reducing energy consumption.
http://dx.doi.org/10.1109/TITS.2013.2296655

IEEE Transactions on Intelligent Transportation Systems, Institute of Electrical and Electronics Engineers (IEEE)
Author: Ge,Xiao-Yan
Author: Li,Zhi-Chun
Author: Lam,William,H K
Author: Choi,Keechoo
Energy-Sustainable Traffic Signal Timings for a Congested Road Network With Heterogeneous Users
2014/06, volume 15, issue 3, pp 1016-1025
This paper proposes a novel model to address the energy-efficient traffic signal timing problem for a congested road network with heterogeneous users. In the proposed model, two types of agents, i.e., the authority and road users, are considered together with the interaction between traffic signal settings and energy policy (e.g., fuel surcharges). To model the route choice behavior of heterogeneous users, a multiclass stochastic traffic network equilibrium problem that considers vehicle delays at signalized intersections and travel demand elasticity is described and formulated as a variational inequality formulation. The authority aims to maximize social welfare of the transportation system by optimizing the traffic signal timings and fuel surcharges. A simulated-annealing-based solution algorithm is developed to solve the proposed model. The findings show that the implementation of the fuel surcharge policy can cause spatial and social inequity issues.
http://dx.doi.org/10.1109/TITS.2013.2291612

Empowering Individuals to Make Environmentally Sustainable and Healthy Transportation Choices in Mega-Cities through a Smartphone App

A paradox of industrialized society is the overreliance on unsustainable fossil fuel energy for transportation and insufficient use of sustainable bodily energy for more physically active modes of transport. Preference for sedentary travel mode such as car driving over physically active travel modes such as walking, biking and public transit which often involves walking has contributed to air pollution and the epidemic of obesity. Further, the public has a knowledge perception bias for energy consumption and efficiency that tend to underestimates carbon emission of day-to-day activities. The project hypothesizes that insufficient and inaccurate knowledge of energy use and bodily energy expenditure can be barriers for adopting more physically active and environmentally sustainable travel modes. The project proposes to conduct a randomized, controlled trial to assess impacts of a behavioral nudge, e.g., a new smartphone app, tentatively named iTransit, on the perception of commute-related energy use and expenditure. The existing smartphone app developed at Hunter College has the ability to detect travel modes using global positioning system (GPS) tracking on a remote geographic information system (GIS) server. It will be expanded to have the ability to report carbon avoidance and calories burned associated with each trip segment and travel mode. Participants of the Queens College Ultimate Transportation Evaluation (QCUTE) surveys (2008-2012) will be randomly allocated to one of three groups (n=3x50): iTransit and car pool parking discount; iTransit only; and control. Knowledge about energy use and expenditure will be measured at baseline and endline. Intention of behavioral changes will be measured through a questionnaire. There will be about 28 public transit users, 20 drivers and 1 or 2 walkers or cyclists in each group, as per our previous QCUTE surveys. A subset of participants will be interviewed to probe further the decision making process of travel modes. The field testing of the iTransit at Queens College can pave the way for its wide application in regional travel surveys, the addressing of privacy concerns, and the solving of any technical difficulties. If improved knowledge of energy consumption and bodily energy expenditure is found to trigger intent to act, such an intervention approach is perhaps best understood as a preventive medicine to reduce the tendency to switch from public transit to car driving.

http://www.utrc2.org/research/projects/environmentally-sustainable-and-healthy-transportation

Author: Wilmink,Isabel
Author: van den Haak,Paul
Author: Woldeab,Zeriet
Author: Vreeswijk,Jaap

Validation of a multi-objective, predictive urban traffic model

ISSN: 9784990493981
2013, 9p

This paper describes the results of the verification and validation of the ecoStrategic Model, which was developed, implemented and tested in the eCoMove project. The model uses real-time and historical traffic information to determine the current, predicted and desired state of traffic in a network. The model was implemented for the city of Helmond, the Netherlands. The validation focused on two questions: (1) does the model realistically and accurately predict the traffic situation 15 minutes ahead, so that traffic management measures may be taken when necessary, and (2) does the desired state, which minimizes the environmental costs, result in lower overall CO? emissions?

Conference: 20th ITS World CongressITS JapanTokyo,Japan StartDate:20131014 EndDate:20131018
Sponsors:ITS Japan

Author: Ewing,Reid
Author: Tian,Guang
Author: Spain,Allison
Effect of Light-Rail Transit on Traffic in a Travel Corridor
2014/06 ,Final Report, 41p
This study seeks to quantify the effect of the University TRAX light-rail line on traffic near the University of Utah, providing quantitative data that can be used to shape future transportation policies aimed at reducing traffic congestion, energy consumption, air pollution, greenhouse gas emissions, and parking costs. Travel demand models have long been used to estimate and evaluate the effects of transportation improvements, like light-rail transit (LRT) investments, on network travel flows and times as part of long-range planning studies, using four-step models or more sophisticated urban simulation studies. However, these are usually ex ante studies. Few ex post evaluations have been done, and in this sense, the effects of transit on traffic volumes and associated energy consumption and air pollution have not been rigorously evaluated to support or refute the justification for subsidized transit. Such quantification is required for a comprehensive cost-benefit analysis. The aim of this study is to provide the first hard evidence of light-rail's impact on traffic in a travel corridor, to quantify the associated savings on energy consumption, air pollution, and parking costs, and to compare cost savings to transit subsidies.
http://ppms.otrec.us/media/project_files/NITC-RR-611_Effect_of_Light-Rail_Transit_on_Traffic_in_a_Travel_Corridor.pdf

Author: Asuncion,J,S
The geographic adaptive potential of freight transportation and production system in the context of fuel and emission constraints
2014, 1 file
The original contribution of this research is to investigate the system-wide dynamics of freight transportation and production in the context of supply chains. A theoretical framework called the ‘Geographic Adaptive Potential’ or GAP is built to understand how constraints in energy and emissions affect the production and distribution of commodities. The changes in the supply chain were investigated in four different components, namely a) the potential to shift to less energy and emissions intensive modes for long-haul freight, b) logistical strategies in the last leg of the chain or urban freight and c) local production and distribution, and d) the accessibility of potential customers to the markets. The design of the GAP components is in correspondence with the links of the supply chain. The analyses yielded an evaluation of the adaptive capacity of the freight transport and production system. For long-haul freight, a GIS-based model was created called the ‘New Zealand Intermodal Freight Network’ or NZIFN. It is an optimisation tool integrating the road, rail and shipping network of New Zealand and calculates that minimum time, operating costs, energy and emissions routes between 2 given locations. The case studies of Auckland to Wellington and Auckland to Christchurch distributions of non-perishable products established that even a marginal increase of rail and coastal shipping share produced around 10% reduction in both freight energy and greenhouse gas emissions. In the study of the last leg of the supply chain, the truck trip generation rates of different food stores were investigated. The key result of this dissertation is the assessment that there is actually limited adaptive capacity of the freight transport and production system.
http://hdl.handle.net/10092/9230

Maritime Policy & Management, Taylor & Francis
Author: Moon,Daniel Seong-Hyeok
Author: Woo,Jong Kyun
The impact of port operations on efficient ship operation from both economic and environmental perspectives
2014/07, volume 41, issue 5, pp 444-461
Recently, shipping lines have focused on efficient ship operation, which relates to energy efficiency issues in shipping and, particularly, to operational issues such that the minimisation of fuel consumption and resulting greenhouse gas emissions. Efficient ship operation in container lines is closely related to the ship's time at sea and ship's time in port. Reduction in port time, thanks to high-quality port operations, allows improvement in the operational efficiency of a liner service by reducing the fuel consumption of a ship at sea and its resulting CO? emissions. The main goal of this article is to investigate how time in port affects efficient ship operation in terms of operating costs, CO? emissions and externalities. For this, as a methodology, a simulation based upon system dynamics is introduced. Major finding is that less time in port resulting from the improvement of port operations contributes to efficient ship operation in terms of operating costs, amount of CO? emissions and external effects in the liner shipping industry. In particular, a sensitivity analysis on efficient ship operation vis-à-vis the quality of port operation shows that bigger ships need to select highly productive calling ports that provide less time in port.
http://dx.doi.org/10.1080/03088839.2014.931607

Author: Hess,Daniel,Baldwin
Author: Ray,Paul
Author: Attard,Nathan
Energy Savings from Transit Passes: An Evaluation of the University at Buffalo NFTA Transit Pass Program for Students, Faculty, and Staff
2014/04 ,Final Report, 207p
The University Transportation Research Center - Region 2 supported a study entitled "Connections Beyond Campus: An Evaluation of the Niagara Frontier Transportation Authority - University at Buffalo Transit Pass Program". Unlimited Access transit passes have become common sustainability programming at many colleges and universities in cities both large and small across the United States. In 2010, the University at Buffalo (UB), in partnership with the Niagara Frontier Transportation Authority (NFTA), established a pilot program to provide select students, faculty, and staff with unlimited prepaid use of the NFTA Metro Rail, a 6.2 mile light-rail rapid transit system which connects Downtown Buffalo and UB's South Campus and the neighborhoods between the two. Though other colleges and universities in Buffalo have been providing transit passes to students at their institutions since 2003, this was the first time in which the UB, the region's largest institution of higher education with 28,600 students, entered into a transit pass agreement with the NFTA. The UB-NFTA Pilot Transit Pass Program concluded after 20 months at the end of the summer 2012 session. Overall, 1,923 students and 300 faculty and staff took part in the program. As the program concluded, it was not officially evaluated by UB. This report seeks to evaluate the effectiveness of the program in a number of focus areas, including the cost of the program to the parties involved, and also the benefits obtained both by the participating organizations and by individual transit pass users. This is accomplished through the use of both qualitative and quantitative analysis of the results of a university-wide survey conducted by the research team in April 2013. The analysis of this project revealed many expected and unexpected results. Some users of the transit pass were new Metro Rail riders, and some previously paid their own fares. The UB-NFTA transit pass was underpriced, which benefited UB and led to lost revenue for the NFTA throughout the course of the program. The program allowed 72 survey respondents to cease owning a vehicle, and 179 respondents to delay owning a vehicle, effectively reducing the cost of a UB education by thousands of dollars a year for participants who could utilize Metro Rail to commute to campus in place of an automobile. The UB-NFTA Pilot Transit Pass Program increased transportation choices and for the first time provided university community members a transportation subsidy which did not take the form of a parking space. UB officials have stated, however, that the intent of the UB-NFTA transit pass program was to provide a link between the South and Downtown campuses, and was not to serve as a commute subsidy. The UB-NFTA Pilot Transit Pass program had the potential to change modes of travel for students, faculty, and staff to the three UB campuses, and did for a short period of time, even if it was done unintentionally. Many survey respondents reported that widening their travel options, using public transit more, driving less, and reducing their carbon footprints were important personal benefits of the pilot transit pass program. UB's pilot transit program provided many benefits to community members, from increased access to new destinations and housing, to reduced demand for parking. The design of a permanent UBNFTA transit pass program, if an agreement is reached in the future, should help the NFTA mitigate lost revenue from pass holders, and should be understood as a means for UB to reduce future capital expenses and greenhouse gas emissions. Additionally, in creating a sustainable transportation system to serve its campuses, UB must carefully consider the equity implications of its existing parking and transportation fee structure, which in its current form incentivizes driving and penalizes public transit users and non-motorized travelers.
http://www.utrc2.org/sites/default/files/pubs/Final-NFTA-Transit-Pass.pdf

Author: Miyoshi,Miyako
Author: Koike,Osamu
Author: Takeba,Toyoyuki
Author: Ohya,Junko
Author: Tonosaki,Yukinori
The Concept of Energy Management in Railway Systems and Development of the EE Train Traffic Control
ISSN: 9784990493981
2013, 9p
The railway is generally considered as an energy-saving mode of transportation. Yet, in order to contribute more to the environment, as well as to ensure a stable supply of electric power and prepare for power price hikes, the further reduction of energy consumption and peak load cuts are needed. To do this, a good grasp of the actual operating conditions, and the supervision and control of energy consumption are also important. This paper introduces the Railway Energy Management System (Railway EMS), which aims for the optimal operation of energy by harmonizing with the transportation and energy required for operations while maintaining the service levels. Furthermore, EE (Energy Efficient) Train Traffic Control, a part of the Railway EMS, reduces the energy consumption and cuts peak loads by adjusting the train running speed and timing.
Conference: 20th ITS World CongressITS JapanTokyo,Japan StartDate:20131014 EndDate:20131018 Sponsors:ITS Japan

PATH Research Report, University of California, Berkeley
Author: Weber,Andreas
Author: Winckler,Andreas
Advanced Traffic Signal Control Algorithms, Appendix A: Exploratory Advanced Research Project: BMW Final Report
2013/09, 52p
Research shows that drivers can reduce fuel consumption by 12% by using Signal Phase and Timing (SPaT) information. These results are based on simulations and the main goal of this project is to build a prototype system that shows that it is possible to reduce fuel consumption when a vehicle is facing multiple traffic signals in a row. An in-vehicle system computes a speed recommendation based on current SPaT information and provides it to the driver via a graphical interface. The driver should be able to adjust his/her driving speed, resulting in improved fuel consumption. In the first field test, the position data of the vehicle is sent to a second system called Adaptive Priority for Individual Vehicle (APIV). APIV is an operational strategy that adapts signal timing to facilitate the movement of individual vehicles through signalized intersections. While the main focus of the speed recommendation system is on reducing fuel consumption, the prime focus of APIV is on reducing the number of stops at red lights at intersections and reduce fuel consumption. In addition APIV helps in reducing the number of stops at red lights and associated intersection delays, reducing travel time. Comprehensive field tests using a BMW vehicle showed that significant fuel savings are possible using the APIV.
http://www.dot.ca.gov/newtech/researchreports/reports/2013/final_report_task_2157b.pdf
https://merritt.cdlib.org/d/ark%3A%2F13030%2Fm5s4865n/1/producer%2F884614370.pdf

Proceedings of the Institution of Mechanical Engineers, Part M: Journal of Engineering for the Maritime Environment, Sage Publications, Incorporated
Author: Feng,Peiyuan
Author: Ma,Ning
Author: Gu,Xiechong
A practical method for predicting the propulsive performance of energy efficient ship with wave devouring hydrofoils at actual seas
2014/11, volume 228, issue 4, pp 348-361
The Energy Efficiency Design Index (EEDI) is made mandatory by the International Maritime Organization to reduce emissions of greenhouse gases from international shipping. In this study, wave energy recovery using a pair of hydrofoils fixed at the ship bow to realize energy efficient propulsion is proposed. This so-called wave devouring hydrofoil (WDH) functions both as an anti-motion fin and a wave energy device, which can help reduce the ship wave added resistance, heave and pitch responses. To evaluate its performance, the coupled interaction between the hydrofoils and the ship under head sea condition is first modeled in the frequency domain together with the evaluation of wave added resistance in the presence of the WDHs. Model test is then conducted using a sample containership. Both the beneficial effect of the WDHs and the validity of the numerical model are proved. The peak response is reduced by 80%, 30% and 25% for added resistance, heave and pitch, respectively. This model is then further modified to include other wave directions. Based on frequency domain results, short-term and long term predictions of speed loss, engine power increase and propeller racing are performed for a 3100TEU containership along her transportation route. The merit of this prediction model is that the hull -propeller -engine interactions is considered from a system balance point of view. It is demonstrated that the WDHs can contribute to the energy-efficient ship propulsion at actual seas, achieving a slight reduction of EEDI and ensuring less speed loss and propeller racing.
http://dx.doi.org/10.1177/1475090213489674
http://pim.sagepub.com/cgi/content/abstract/228/4/348

Author: Bogne Nyitchognaa,Prisca Laure
Author: Nouvelière,Lydie
Author: Orfila,Olivier
Author: Glaser,Sébastien
Author: Mammar,Said France

Impact of full speed range ACC on the traffic, the safety and the energy consumption

2014/04, 10p

In this paper, an assessment of the FSRACC impacts on a simultaneous combining of traffic, safety and environment is made on the basis of the simulation across a network while taking into account the penetration rate of FSRACC (from 0% to 100%). To carry out this study, it is necessary to have some indicators and models. Various variables can be used to evaluate the longitudinal ADAS impacts on these key characteristics referring to indicators of traffic, safety and environment that will therefore be used for this evaluation. Some models consider the behavior of individual drivers under the influence of vehicles in their proximity (microscopic models) or the collective flow of vehicles (macroscopic models) or the platoon of vehicles (mesoscopic models).Within the framework of this study, a simulator is developed with driver and FSRACC models. Both driver and FSRACC simulators are merged. The indicators matching each model are calculated, analyzed, interpreted and compared before and after merging according to the penetration rate of FSRACC equipped vehicles. It is shown that the proposed system can provide a natural following performance similar to a human driving. The proposed simulator can be used to evaluate other longitudinal ADAS based on accelerations models and to compare different kinds of such longitudinal ADAS.

Conference: Transport Research Arena (TRA) 5th Conference: Transport Solutions from Research to DeploymentEuropean CommissionConference of European Directors of Roads (CEDR)European Road Transport Research Advisory Council (ERTRAC)WATERBORNE??European Rail Research Advisory Council (ERRAC)Institut Francais des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux (IFSTTAR)Ministère de l'Écologie, du Développement Durable et de l'ÉnergieParis,France StartDate:20140414 EndDate:20140417 Sponsors:European Commission, Conference of European Directors of Roads (CEDR), European Road Transport Research Advisory Council (ERTRAC), WATERBORNE??, European Rail Research Advisory Council (ERRAC), Institut Francais des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux (IFSTTAR), Ministère de l'Écologie, du Développement Durable et de l'Énergie

http://tra2014.traconference.eu/papers/pdfs/TRA2014_Fpaper_18456.pdf

Author: Tsamboulas,Dimitrios
Author: Moraiti,Panayota France
Energy-efficient urban freight logistics: the set-up and operation of freight quality partnerships in European cities
2014/04, 10p
"Freight Quality Partnerships" are being increasingly established in Europe in the last decade, bringing together local administrations, the freight industry, businesses and other interested stakeholders, with the scope to develop and support strategies to achieve energy efficient and sustainable solutions for urban freight delivery. In light of limited research available on this concept, the paper describes and analyses the results of six pilot implementations in six European cities that include the establishment and operation of Freight Quality Partnerships. The analysis provides valuable insight in terms of drawing conclusions and providing recommendations with regard to key strengths and opportunities, barriers and threats for a successful set-up, as well as efficient and long term sustainable operation of this collaborative scheme.
Conference: Transport Research Arena (TRA) 5th Conference: Transport Solutions from Research to DeploymentEuropean CommissionConference of European Directors of Roads (CEDR)European Road Transport Research Advisory Council (ERTRAC)WATERBORNE??European Rail Research Advisory Council (ERRAC)Institut Francais des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux (IFSTTAR)Ministère de l'Écologie, du Développement Durable et de l'ÉnergieParis,France StartDate:20140414 EndDate:20140417 Sponsors:European Commission, Conference of European Directors of Roads (CEDR), European Road Transport Research Advisory Council (ERTRAC), WATERBORNE??, European Rail Research Advisory Council (ERRAC), Institut Francais des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux (IFSTTAR), Ministère de l'Écologie, du Développement Durable et de l'Énergie
http://tra2014.traconference.eu/papers/pdfs/TRA2014_Fpaper_18404.pdf

IET Intelligent Transport Systems, Institution of Engineering and Technology
Author: Innamaa,Satu
Author: Penttinen,Merja
Impacts of a green-driving application in city buses on fuel consumption, speeding and passenger comfort
2014/08, volume 8, issue 5, pp 435-444
The impacts of a green-driving application on fuel consumption, speeding and passenger comfort were assessed on a frequently operated bus route in the Helsinki metropolitan area. The main results of the study show that use of a green-driving application in buses significantly reduces fuel consumption and speeding and increases passenger comfort. Novel users of the system drove more economically than those who had used the system longer, but the impact was smaller than found in previous studies. In addition to savings on fuel, the application encouraged driving within the speed limit. A transfer effect on journeys without the system was found for long-term users but not for novel users. Furthermore, passengers of drivers who used the green-driving application gave better grades for decelerations and the driver's service attitude in peak traffic. The authors main conclusion is that use of a green-driving application is beneficial even after years of use for reducing both fuel consumption and speeding. The authors recommended that drivers be regularly encouraged to use the system and that green driving be included in driver training.
http://dx.doi.org/10.1049/iet-its.2013.0039

IET Intelligent Transport Systems, Institution of Engineering and Technology
Author: Wang,Meng
Author: Daamen,Winnie
Author: Hoogendoorn,Serge
Author: van Arem,Bart
Potential impacts of ecological adaptive cruise control systems on traffic and environment
2014/03, volume 8, issue 2, pp 77-86
In this contribution, the authors put forward a modelling framework for generic Advanced Driver Assistance Systems (ADAS) based on rolling horizon optimal control and design control algorithms for an Ecological Adaptive Cruise Control (EcoACC) system under this framework. The accelerations of EcoACC vehicles are determined by minimizing some predicted cost, and the optimal control problem is solved using a dynamic programming approach. The proposed algorithm is applied on a single lane ring road to examine the impacts of the EcoACC system employing the Eco-driving strategy comparison with a system employing an Efficient-driving strategy. Simulation results show that the Eco-driving strategy results in smoother vehicle behaviour compared to the driving strategies that only consider travel efficiency (Efficient-driving strategy). At the macroscopic level, the Eco-driving strategy results in a lower speed and lower flow at free traffic conditions, but a higher speed and higher flow at moderate congested conditions compared to the Efficient-driving strategy. From an environment perspective, the Eco-driving strategy results in a lower spatial CO? emission rate. However, in the ring-road scenario where the demand is not fixed, the impact of the EcoACC system on total CO? emissions is negative at moderate congested conditions, due to the high flow it supports.
http://dx.doi.org/10.1049/iet-its.2012.0069

IET Intelligent Transport Systems, Institution of Engineering and Technology
Author: Bottero,Marco
Author: Chiara,Bruno,Dalla
Author: Deflorio,Francesco
Author: Franco,Gino
Author: Spessa,Ezio
Model-based approach for estimating energy used by traffic flows on motorways with ITS
2014/11, volume 8, issue 7, pp 598-607
Monitoring traffic flows on road infrastructures has increasingly become a more common practice. Diverse types of sensors and devices to count and classify vehicles have been tested and installed on European roads in recent years, contributing to the growing availability of several databases. Moreover, methodologies to assess energy consumption for transport and the consequent emissions require several data sets, which are not always available. Consequently, it is an interesting endeavour to investigate an approach that can model energy dissipation, beginning from simple mechanical rules and traffic monitoring data and related parameters. The presence of ITS can have a positive influence on traffic flows. Beginning with this assumption, this study presents different scenarios based on actual and simulated data to estimate energy used in vehicular flow and how the energy consumed can change when the vehicular flow changes due to the influence of an ITS application. The approach presented in this study accounts to use both a mechanical model, providing a simple evaluation of energy consumption, and a traffic micro-simulation approach; both cases begin from the measurement of classical traffic flow parameters.
http://dx.doi.org/10.1049/iet-its.2013.0132

Author: Urien,Nicolas
Energy Optimization for Public Transportation Applications
ISSN: 9780784412862
2013/04, pp 404-415
Siemens offers infrastructures and intelligent power-management solutions that allow towns and cities to reduce their environmental footprint and to improve quality of life for their residents. Among the broad Siemens' transportation portfolio, their automated people mover (APM) solutions - first implemented in France in 1983 and now in operation on 12 different airport or urban mass transit lines worldwide - bring significant contribution to energy savings. Thanks to their Val, Cityval and Airval systems, Siemens provides mass transit operators and authorities, as well as airport infrastructure managers with efficient, proven and eco-friendly transportation solutions. The purpose of this paper is first to explain the energy consumption chain for an APM. It includes a presentation of the solutions Siemens has integrated in their product lines, Airval and Cityval (Siemens' state-of-art APM solutions resulting from the Neoval R&D program): system operation, vehicle performance and components. Second, Siemens will present solutions successfully implemented by Siemens to optimize energy consumption on existing metro lines: coasting mode, as for instance designed for Paris metro line 14 with Siemens' CBTC and which results in an average energy saving of 16% ; and regulation of train dwell-time, which has been implemented on the 1st metro line of Torino operated with a Val 208 APM system with a saving of 3 300 MWh per year.
Conference: 14th International Conference on Automated People Movers and Automated Transit SystemsAmerican Society of Civil EngineersPhoenix,Arizona,United States StartDate:20130421 EndDate:20130424 Sponsors:American Society of Civil Engineers
http://dx.doi.org/10.1061/9780784412862.031

Author: Fouda,Salwa
Author: Hollett,Todd
Author: Gao,David
Energy Management Solutions for "Green" Transit Systems
ISSN: 9780784412862
2013/04, pp 416-424
Environmental and economic trends are driving transit system authorities to reduce system capital costs and identify opportunities for operating efficiency improvements. The factors driving these trends include rising energy costs and tightening public budgets. Operators face the challenge to select the appropriate technology and mode of operation that will provide peak performance, lowest operating cost and the smallest environmental footprint while minimizing energy consumption. As a case study, Bombardier performed a detailed feasibility study for a very complex transit system. Using its EnerGplan simulation tool, the Energy Management Team conducted an annual energy-consumption baseline analysis, which agreed with actual field measurements. Then performed a detailed analysis to determine the optimal EnerGstor solution required for this system and quantify the potential annual energy savings and reduction of CO? emissions.
Conference: 14th International Conference on Automated People Movers and Automated Transit SystemsAmerican Society of Civil EngineersPhoenix,Arizona,United States StartDate:20130421 EndDate:20130424 Sponsors:American Society of Civil Engineers
http://dx.doi.org/10.1061/9780784412862.032

Research in Transportation Business & Management, Elsevier
Author: Rizet,Christophe
Author: Cruz,Cecilia
Author: de Lapparent,Matthieu
CO? emissions of French shippers: The roles of delivery frequency and weight, mode choice, and distance
2014/10, volume 12, pp 20-28
In this article, the authors describe the effects of delivery frequency, mode choice, distance, and shipment weight on the CO? emissions of French shippers, taking advantage of a 2004 survey of French shippers (ECHO) which describes the characteristics of 3000 shippers, 10,000 shipments, and 20,000 transport chain legs. Once the energy consumption and CO? emissions of every shipment have been computed, they are divided by the corresponding number of ton-kilometers in order to find their carbon intensity (in grams of CO? per ton-kilometer). The authors then analyze the latter with respect to a number of selected shipment characteristics: shipment frequency and mode choice (planning choices), and Euclidean distance and yearly tonnage shipped to the same customer (transport demand). They also develop two log-linear regression models in which carbon intensity is assumed to be caused by these characteristics. They find that shippers' transport planning choices have at least as much impact on carbon intensity as the characteristics of transport demand.
http://dx.doi.org/10.1016/j.rtbm.2014.09.003
http://www.sciencedirect.com/science/article/pii/S2210539514000625

Author: Platz,Tilman
Efficient Cargo Bundling in Long-distance Distribution Using SaaS
2013, 15p
In Europe, one out of four trucks is driving around empty. And the trucks loaded with cargo only use between a third and a half of their transport capacity. This represents a waste of space, and money. A typical large scale shipper or logistics service provider deals with transport flows between many locations, across several hubs and distinct consignees. In this context, and in most cases, truck and vehicle capacity planning is done without taking into account the overall supply chain picture. This leads to a situation where transport orders are very fragmented and often not optimised. Through intelligent order reconstruction and transport bundling along with adjusted routings of cargo through logistical networks, in distribution over longer distances, capacity usage of vehicles can be considerably increased. A requirement for the implementation of such logistical concepts is information and communications technology (ICT) supporting the whole distribution process. MixMoveMatch.com is an innovative logistics software service provided in the cloud that optimises the shipping of goods in distribution systems by bundling shipments across different companies. It combines order reconstruction and vehicle load planning in order to increase capacity use of the vehicles engaged in distribution. This does not only contribute to a reduction in transport cost, but also helps to reduce negative environmental impact resulting from transport operation: The number of trucks trips is being reduced, there is fewer fuel and energy consumption, and there are fewer emissions of carbon dioxide (CO?) and harmful substances. The paper shows the key features of the service and describes how MixMoveMatch.com functions with respect to the underlying logistical concept and ICT. It is outlined how an idea that evolved at a major shipper turned into a commercial service product. Finally, the economic and environmental benefits of MixMoveMatch.com are explained.
Conference: European Transport Conference 2013Association for European TransportFrankfurt,Germany StartDate:20130930 EndDate:20131002 Sponsors:Association for European Transport
http://abstracts.aetransport.org/paper/index/id/296/confid/1

Comparison of Passenger Rail Energy Consumption with Competing Modes
Lower fuel and energy consumption as well as lower greenhouse gas (GHG) emissions per passenger trip are frequently cited benefits of passenger rail in comparison with other, competing travel modes. Yet these benefits are not well documented nor are procedures for measuring them well delineated. Many currently available analyses of energy and GHG emissions reduction impacts of passenger rail service have significant shortcomings: (1) Passenger rail fuel consumption data may not fully represent impacts, since they are based on broad averages that include many different variations in distance traveled, amenities provided, speeds, operating environment, type of train operated, and form of propulsion. Similarly, energy consumption estimates for competing modes usually represent broad averages that do not necessarily reflect the energy profiles of comparable trips on modes that compete with passenger rail service accurately. (2) Using disaggregated data, linked more directly to where and how the fuel and energy attributable to specific trips is consumed, can provide a greater understanding of what is actually occurring. In addition, significant variations in fuel and energy consumption can occur by regions of the country and by individual states and metropolitan areas, and these variations should also be taken into account when analyzing comparable modes of travel, along with specific characteristics of available technologies and operating environments. (3) The pace at which new energy technologies may be put into service differs markedly between passenger rail and competing modes. To date, in the passenger rail industry, decisions about train types and operating patterns have not been strongly influenced by energy use and efficiency concerns. Instead, many technology and operations decisions have been motivated primarily by safety concerns, the ability to use proven equipment designs, initial implementation costs, and the need to work within existing operating and infrastructure constraints. In contrast, competing modes may be moving more aggressively to reduce energy consumption. There is a need for research to (1) compare fuel and energy consumption between representative door-to-door rail trips and comparable trips by competing travel modes and (2) provide guidance for potential energy savings in the future. The objective of this research is to provide like-for-like comparisons of energy consumption and greenhouse gas emissions for commuter and intercity passenger rail operations and for competing travel modes. To accomplish this objective, the research should include, but not be limited to, developing: (1) An analytical framework for equivalent comparison of mode-to-mode fuel and energy consumption and GHG emissions, applied to case studies using disaggregated data (scope 1 and scope 2 emissions only, as defined by The Climate Registry); (2) A quantitative decision-support tool for evaluating and comparing fuel and energy consumption and GHG emissions by commuter and intercity passenger rail operations and by competing modes of transportation for comparable trips; and (3) An evaluation of opportunities to improve fuel and energy efficiency and reduce GHG emissions for intercity and commuter passenger rail.
http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=3482

Procedia - Social and Behavioral Sciences, Elsevier
Author: Kijewska,Kinga
Author: Johansen,Bjørn,Gjerde
Comparative Analysis of Activities for More Environmental Friendly Urban Freight Transport Systems in Norway and Poland
2014/10/30, volume 151, pp 142-157
Negative effects of urban distribution of goods in terms of energy consumption and air pollution are caused mainly by a low level of cooperation between partners in the supply chain, and also the low effectiveness of transport systems. The issues of urban freight transport functioning and effects on the city environment have recently been more and more often taken into account. Many projects on a local, regional, national as well as cross-boundary scale have emerged, with a direct focus on limiting the negative impacts of urban freight deliveries on the environment. In this paper the authors introduce a study performed for Polish and Norwegian cities focused on initiatives concentrated on activities aimed at limiting the negative impacts of freight transport on urban environment. A comparative analysis of the Polish and Norwegian projects was made, taking into account both quantitative and qualitative aspects. This was the first part of the GRASS (GReen And Sustainable freight transport Systems in cities) research project, which is being undertaken by the Maritime University of Szczecin and the Institute of Transport Economics from Oslo through the Polish-Norwegian Research Programme.
Conference: 1st International Conference Green Cities 2014 - Green Logistics for Greener CitiesSzczecin,Poland StartDate:20140519 EndDate:20140521
http://dx.doi.org/10.1016/j.sbspro.2014.10.015
http://www.sciencedirect.com/science/article/pii/S1877042814054573

Journal of Rail Transport Planning & Management, Elsevier
Author: Tschirner,Simon
Author: Sandblad,Bengt
Author: Andersson,Arne,W
Solutions to the problem of inconsistent plans in railway traffic operation
2014/12, volume 4, issue 4, pp 87-97
The demands on modern railway traffic systems are high. Higher efficiency is required, meaning better utilization of infrastructure capacity and reduced energy consumption. Timeliness has a high priority and safety has to be unconditional. The operation of railway traffic includes many actors in different roles and separate organisations. The authors' studies of train traffic control have shown that improved collaboration between the actors and advanced control systems are needed to meet the high demands. Instead, many actors are following their own plans based on their own goals and insufficient information. This paper explores the concept of a real-time traffic plan (RTTP) to coordinate collaboration between the different actors, and demonstrates how it can be implemented in systems for train traffic control and driver information. The authors present the traffic control system STEG and the driver advisory system CATO. Both systems are in use, allowing re-planning and sharing of such an RTTP. Based on these systems, they discuss general and specific design solutions, in accordance with human factors and explain a way of introducing automation that supports the traffic controllers without interfering with their planning. With these systems, they are able to show that a more holistic approach to train traffic control, based on an RTTP, is technically feasible and that sharing this plan with the train drivers substantially improves qualities in train traffic control.
http://dx.doi.org/10.1016/j.jrtpm.2014.10.002
http://www.sciencedirect.com/science/article/pii/S2210970614000444

Author: Nahlik,Matthew,J
Author: Chester,Mikhail,V
Policymaking Should Consider the Time-dependent Greenhouse Gas Benefits of Transit-oriented Smart Growth
2015, 16p
Cities are increasingly developing greenhouse gas (GHG) mitigation plans and reduction targets based on a growing body of knowledge about climate change risks, and changes to passenger transportation are often at the center of these efforts. Yet little information exists for characterizing how quickly or slowly GHG emissions reductions will accrue given changes in urban form around transit, and whether benefits will accrue quickly enough to meet policy year targets (such as reaching 20% of 1990 GHG emissions levels by 2050). Even more complicated is when cities focus on achieving GHG reductions through integrated transportation and land use planning, as changes in emissions can occur across many sectors (such as transportation, building energy use, and electricity generation). Using the Los Angeles Expo line, a framework is developed to assess how financing schemes can affect the rate of redevelopment and resulting life-cycle GHG emissions from travel and building energy use. The framework leverages an integrated transportation and land use life-cycle assessment model that captures upfront construction of new development near transit and the long-term changes in household energy use for travel and buildings. The results show that for the same amount of development around the Expo line, it is possible to either meet (if aggressive redevelopment happens early) or not meet (if significant redevelopment does not start until decades out) state GHG goals by 2050. The time-based approach reveals how redevelopment schedules should be considered when setting strategies for meeting future GHG emission targets.
Conference: Transportation Research Board 94th Annual MeetingTransportation Research BoardWashington,DC,United States StartDate:20150111 EndDate:20150115 Sponsors:Transportation Research Board
http://docs.trb.org/prp/15-0254.pdf

Author: DiDomenico,Giovanni,C
Author: Dick,C,Tyler
Methods of Analyzing and Comparing Energy Efficiency of Passenger Rail Systems
2015, 18p
Modal energy efficiency is increasingly important when evaluating benefits and costs of future transportation system investment due to growing concerns about the future environmental impact of passenger travel. Since passenger rail systems are often cited as being relatively more energy efficient than other modes, the reduced environmental impact is one justification for investment in new commuter rail projects. It is important that studies of purported environmental benefits analyze the energy efficiency of passenger rail systems and competing modes accurately and fairly by clearly defining the flow of energy through each transportation system being considered. Furthermore, operational practices and constraints of the railway environment can complicate the analysis of energy efficiency, making it important to choose metrics that accurately describe the situation of interest. This research identifies and describes four methods for analyzing the energy efficiency of passenger rail systems. Each approach highlights a different step along the energy flow path. Each method is applied to analyze the energy efficiency of 25 commuter rail systems in the United States. The results of each energy efficiency calculation method are then compared to illustrate how the relative attractiveness of each system can change based on the selected analysis approach. By better understanding the challenges of conducting energy efficiency analyses involving different energy sources and the fair methods of accurate comparison, researchers and policy makers can make more informed decisions on the most appropriate method of analysis to draw accurate comparisons between rail technologies and competing modes.
Conference: Transportation Research Board 94th Annual MeetingTransportation Research BoardWashington,DC,United States StartDate:20150111 EndDate:20150115 Sponsors:Transportation Research Board
http://docs.trb.org/prp/15-0518.pdf

Author: Tang,Haichuan
Author: Dick,C,Tyler
Author: Feng,Xiaoyun
A Coordinated Train Control Algorithm to Improve Regenerative Energy Receptivity in Metro Transit Systems
2015, 16p
Current Automatic Train Operation (ATO) algorithms focus mainly on reducing mechanical energy of motion for a single train within an existing timetable. But the reuse of regenerative energy is another factor contributing to energy consumption and conservation in multi-train networks. To improve regenerative energy receptivity and energy savings in a bi-directional metro transit network, this paper formulates a coordinated train control algorithm based on genetic algorithms techniques. The potential for saving energy according to different station departure time intervals between two opposing trains (synchronization time) is tested. Simulation on the Visual C++ platform demonstrates that the algorithm can provide an optimal train speed profile with better energy performance while satisfying operational constraints. Different synchronization times have different optimization ratios. This research is another step to facilitate development of an ATO control algorithm that considers overall energy consumption. Increased knowledge of the influence of synchronization time at stations on energy consumption in regenerative multi-train networks will also aid design of more energy efficient timetables.
Conference: Transportation Research Board 94th Annual MeetingTransportation Research BoardWashington,DC,United States StartDate:20150111 EndDate:20150115 Sponsors:Transportation Research Board

Author: Bruckmann,Dirk
Author: Saeednia,Mahnam
Author: Nash,Andrew
Author: Weidmann,Ulrich
Strategies for Increasing the Energy Efficiency of Rail Freight Service in Switzerland
2015, 15p
This paper describes strategies for reducing energy use in Switzerland's rail freight sector. The research was motivated by the Swiss government's decision to phase out the use of nuclear energy. While rail freight is very energy efficient there remain significant possibilities for reducing energy use. This paper provides an overview of these opportunities by examining approaches for reducing energy use along the entire value chain of rail freight operation. For example, the energy efficiency of the infrastructure can be enhanced by making improvements to provide more train paths and enabling more freight to be transported over the same infrastructure. The rolling stock can be redesigned to reduce rolling resistance, optimize aerodynamic performance and reduce the weight of wagons. In the area of network design and scheduling it is possible to reduce deviations and unnecessary braking. Improved dispatching algorithms can be used to provide drivers with energy optimized trajectories and to help minimize the number of unplanned stops. All these measures will also improve the quality and reduce the costs of freight rail service, thus helping support additional modal shift from road to rail.
Conference: Transportation Research Board 94th Annual MeetingTransportation Research BoardWashington,DC,United States StartDate:20150111 EndDate:20150115 Sponsors:Transportation Research Board

Author: Li,Pengfei
Author: Mirchandani,Pitu
Author: Zhou,Xuesong
Simulation-based Traffic Signal Optimization to Minimize Fuel Consumption and Emission: A Lagrangian Relaxation Approach
2015, 17p
More and more cities are considering fuel consumption and vehicular emission reduction as a major objective of traffic signal optimization. Traditionally, optimal signal timings based on delay and stops do not necessarily generate the minimum fuel consumption. To address this issue, this paper presents a new approach to minimize the vehicles' fuel consumptions on arterials by optimizing traffic signal timings. First, MOVESLite, an open-source microscopic emission model, is coupled with VISSIM to estimate the fuel consumptions for different signal timings. Then the generated total fuel consumption in VISSIM is used as the objective function for optimizing signal timings, utilizing the Lagrangian Relaxation framework. The signal timings are implemented with the software-in-the-loop signal emulator (ASC/3) in VISSIM and adjusted through the National Transportation Communications for Intelligent Transportation Systems (ITS) Protocol (NTCIP). A case study shows that fine-tuning signal timing for the emission reduction can further reduce the fuel consumption by 2% compared to delay-based optimal signal timing. The contributions of this paper include: (1) A new signal timing optimization approach that utilizes the Lagrangian Relaxation, instead of common search heuristics, that also provides upper and lower bounds to better understand how close to optimality the solution is; and (2) a "field-ready" system that uses a full-scale signal emulator and a real standard communication protocol for data collection and signal setting.
Conference: Transportation Research Board 94th Annual MeetingTransportation Research BoardWashington,DC,United States StartDate:20150111 EndDate:20150115 Sponsors:Transportation Research Board

Author: Deng,Qichen
Author: Ma,Xiaoliang
A Simulation Platform for Autonomous Heavy-duty Vehicle Platooning in Mixed Traffic
2015, 16p
Autonomous platooning of heavy-duty vehicles (HDV) using cooperative adaptive cruise control (CACC) on highway is a promising method for improving transport and energy efficiency. This approach has recently attracted extensive attention from vehicle industry, transport authority and researchers. One essential hypothesis for implementing HDV platooning is that it will bring about benefits to overall traffic system, such as expansion of road capacity, energy saving and emission reduction etc. However, little research effort has been found to quantify the impacts of HDV platoons on real traffic. Based on an existing microscopic traffic simulation environment, this paper initializes a simulation platform with detailed modeling of HDV platoon and operation enabled by CACC. The fuel consumption is also estimated for each simulation step using an analytical fuel consumption model. This platform makes it possible to quantify the impacts of HDV platoons in mixed traffic in terms of traffic flow characteristics, highway capacity, fuel efficiency and safety by microscopic simulation. In the computational experiment, the impacts of HDV platoon with different penetration rates are investigated. The simulation results show that autonomous platooning of HDVs, especially when the HDV penetration rate is higher than 40%, can gain substantial fuel saving while preserving generally positive impacts on overall traffic.
Conference: Transportation Research Board 94th Annual MeetingTransportation Research BoardWashington,DC,United States StartDate:20150111 EndDate:20150115 Sponsors:Transportation Research Board

Transportation Research Record: Journal of the Transportation Research Board, Transportation Research Board
Author: Du,Yuquan
Author: Meng,Qiang
Author: Wang,Yadong
Budgeting Fuel Consumption of Container Ship over Round-Trip Voyage Through Robust Optimization
ISSN: 9780309295772
2015, issue 2477, pp 68-75
A proposed practical fuel budget problem aims to determine a group of bunker fuel budget values for a liner container ship over a round-trip voyage under uncertainties caused by severe weather conditions. According to research collaboration with a global container shipping line in Singapore, the proposed problem holds a kernel position in the ship fuel efficiency management programs advocated by container shipping lines because of the downward pressure of soaring bunker prices. The synergetic influence of sailing speed and weather conditions on ship fuel consumption rate was considered when the bunker fuel budget of a ship over a round-trip voyage was estimated. To address the adverse random perturbation of fuel consumption rate under severe weather conditions, state-of-the-art robust optimization techniques were employed, and a robust optimization model for the fuel budget problem was developed. The developed model can be dualized into a mixed-integer linear programming model that may be solved by commercial optimization solvers. However, algorithmic findings in the field of robust optimization provided a polynomial time solution algorithm, and it was retrofitted to accommodate the proposed ship fuel budget problem. The case study of an Asia-Europe service demonstrates the computational performance of the proposed solution algorithm and the competence of the proposed robust optimization model to produce fuel budget values at different levels of conservatism possessed by the fuel efficiency specialists in container shipping lines.
http://dx.doi.org/10.3141/2477-08

Author: Kamalanathsharma,Raj Kishore
Author: Rakha,Hesham,A
Author: Yang,Hao

Network-wide Impacts of Vehicle Eco-Speed Control in the Vicinity of Traffic Signalized Intersections

2015, 16p

Eco-speed control is an advanced eco-driving or eco-vehicle control algorithm that uses signal phasing and timing (SPAT) information from signalized intersections to generate fuel-optimum vehicle trajectories. The proposed algorithm uses Connected Vehicles technology to communicate between vehicles and the infrastructure. The research presented in this paper integrates the algorithm with state-of-the-art traffic simulation software, in this case the INTEGRATION software, to develop a tool capable of analyzing and evaluating the system-wide impacts of such a system. The algorithm uses dynamic programming to generate fuel-efficient vehicle trajectories in the vicinity of traffic signalized intersections by controlling the vehicle Variable Limiting Speed (VLS) so as to minimize its fuel consumption while maintaining safe car-following behavior. Eco-speed control uses constraints upstream and downstream of the intersection to generate a longitudinal VLS function. Multiple simulations for different levels of congestion (volume-to-capacity ratios) and levels of market penetration suggest that the average fuel savings per vehicle are in the range of 26 percent when all vehicles are equipped with such systems. Similarly, the average reduction in the total delay reaches 65 percent within the vicinity of traffic signalized intersections. The results also demonstrate that at levels of market penetration less than 50 percent the system does not produce system-wide fuel and delay savings. These savings are also higher for lower levels of traffic congestion.

Conference: Transportation Research Board 94th Annual MeetingTransportation Research BoardWashington,DC,United States StartDate:20150111 EndDate:20150115 Sponsors:Transportation Research Board

Transportation Research Record: Journal of the Transportation Research Board, Transportation Research Board
Author: Zis,Thalis
Author: North,Robin,J
Author: Angeloudis,Panagiotis
Author: Ochieng,Washington,Y
Author: Bell,Michael,G. H.
Environmental Balance of Shipping Emissions Reduction Strategies
ISSN: 9780309295765
2015, issue 2479, pp 25-33
Maritime shipping is regarded as the most efficient mode of transport; however, its contribution to climate change through greenhouse gas emissions and the health issues related to shipping activity near residential centers cannot be neglected. In recent years, the efforts of regulators, ship operators, and port authorities have led to actions for ship emissions reduction to improve shipping's environmental performance. This work builds on an activity-based methodology that allows the estimation of emissions and examines environmental effects of slow steaming, fuel regulations, near-port speed-reduction schemes, and cold ironing. Pollutant emissions of carbon dioxide, sulfur dioxide, nitrogen oxides, and black carbon are modeled. A linear programming model minimizes fuel consumption through speed differentiation on a shipping line's routes based on fuel costs and binding regulations in each segment of the journey. Although the examined emissions-reduction actions may have a positive regional environmental effect by cutting emissions, it is possible that additional emissions are generated elsewhere because of increased sailing speeds beyond regulated areas. Trade-offs between pollutants are observed for reduction actions that may have a positive effect on some emission species but at the same time result in additional particulate matter and black carbon emissions. The presented framework allows key actors to conduct comprehensive studies and design improved emissions reduction actions with fewer negative impacts in other areas.
http://dx.doi.org/10.3141/2479-04

Author: Cano,Alex
Author: Chester,Mikhail,V
Time-Based Life-Cycle Assessment for Environmental Policymaking: Greenhouse Gas Reduction Goals and Public Transit
2015, 15p
As decision-makers increasingly embrace life-cycle assessment (LCA) and target transportation services for regional environmental goals, it becomes imperative that outcomes from changes to complex systems are accurately communicated. Greenhouse gas (GHG) reduction policies have created interest in better understanding how public transit systems reduce emissions. Using Los Angeles, California as a case study, an LCA is developed of the Expo light rail line and a competing car trip that includes vehicle, infrastructure, and energy production processes, in addition to propulsion. Energy use, GHG emissions, and the potential for photochemical smog formation and respiratory impacts are assessed. When results are normalized per passenger kilometer traveled (PKT), life-cycle processes increase impacts by up to 83% for energy use and GHG emissions, and up to 690% for smog and respiratory impact potentials. However, the use of a non-time-based PKT normalization obfuscates a decision-maker's ability to understand whether the deployment of a transit system reduces emissions below a future year policy target (e.g., 80% of 1990 emissions by 2050). The year-by-year marginal effects of the decision to deploy the Expo line are developed including reduction in automobile travel. The time-based marginal results provide clearer explanations for how environmental effects in a region change and the critical life-cycle processes that should be targeted to achieve policy targets. The line can be expected to breakeven on GHG emissions within two decades but its ability meet long-run policy targets is most sensitive to infrastructure construction emissions, mode shifting, a changing electricity mix, and improving automobile fuel economy.
Conference: Transportation Research Board 94th Annual MeetingTransportation Research BoardWashington,DC,United States StartDate:20150111 EndDate:20150115 Sponsors:Transportation Research Board

WIT Transactions on the Built Environment, Wessex Institute of Technology
Author: Kimura,N
Author: Miyatake,M
Strategy of Speed Restriction Allowing Extended Running Times to Minimize Energy Consumption and Passenger Disutility
ISSN: 9781845647667
2014, volume 135, 11p
Due to a power crisis caused by the Great East Japan Earthquake on 11 March 2011 and the subsequent accident of Fukushima Daiichi nuclear power station, electrical energy consumption used in every sector including railway operators was restricted by the government in the summer of the same year. Since then, railway manufacturers, operators and research organizations have developed technologies of reducing train energy consumption. Improvement of scheduling and train speed control for energy-savings only needs software-based improvements that lead to less cost and time. The authors consider “restraining maximum speed of the train allowing extended running times” in order to reduce train energy consumption against power crisis or substation failure. The problem was defined as a multiobjective optimization problem. Energy consumption and total incremental trip time were calculated as objective functions by using speed profile simulation. The total incremental trip time was calculated with the increased sum of all passengers’ running, stoppage and waiting times by speed restriction. All the feasible combinations of setting maximum speed restriction for each train were tested to find the pareto-optimal solutions. The final solutions which are better than the curtailed train service were selected from the paretooptimal solutions. The efficacy of the proposed method was demonstrated with a case study of one direction service of a double track commuter line.
Conference: 14th International Conference on Railway Engineering Design and Optimization (COMPRAIL 2014)Wessex Institute of TechnologyRome,Italy StartDate:20140624 EndDate:20140626
Sponsors:Wessex Institute of Technology

WIT Transactions on the Built Environment, Wessex Institute of Technology
Author: Song,X,M
Author: Xun,J
Author: Ning,B
Author: Tang,T
Author: Wang,B
An Integrated Platform For Energy-saving Operation In Urban Rail Transit
ISSN: 9781784660253
2015, issue 155, 12p
As regenerative braking technology is widely used in urban rail transit system, there is an interest to find an optimization method for energy-saving train operation based on the information from traction power supply. To study such method, this paper introduces an integrated hardware-in-loop simulation platform, which has a model integrating train operation control and traction power supply. In this model, the train operation optimal control model provides train operation information for a traction power supply model, and the traction power supply model generates data of voltage and current based on the characteristics of traction power supply, which is needed by the train operation optimal strategy. Based on the model, an energy-saving optimal algorithm for train control is proposed. The algorithm adds third-rail voltage into inputs. When the third-rail voltage rises, the algorithm will judge whether nearby trains under control of the same substation meet the conditions to accelerate and will adjust train operation mode (accelerate) if possible to realize the maximum utilization of regenerative braking energy. In order to ensure schedule adherence, the proposed model adjusts running time in the next inter-station. The feasibility and effectiveness of the proposed method are verified on the integrated hardware-in-loop simulation platform based on field test of Yizhuang line, Beijing Subway. The result shows that the proposed algorithm has little effect on punctuality rate and it can save 7.34% on energy for traction at the most.
Conference: 14th International Conference on Railway Engineering Design and Operation (COMPRAIL/14)Wessex Institute of TechnologyRome,Italy StartDate:20140624 EndDate:20140626
Sponsors:Wessex Institute of Technology
http://dx.doi.org/10.2495/CRS140121

Eco-Friendly Intelligent Transportation System Technology for Freight Vehicles
Among several strategies to reduce fuel consumption and greenhouse gas emissions from motor vehicles, a variety of Intelligent Transportation System (ITS) technologies are emerging that can be very cost effective. These ECO-ITS technologies are focused on fuel-efficient operation of vehicle and traffic management systems to achieve better fuel economy and lower tailpipe emissions without compromising the safety of the driver or other road users. Most of the research to date has been applied to light-duty vehicles. This project will develop and apply new ECO-ITS technologies that can be specifically designed for heavy-duty vehicles and freight traffic associated with goods movement to improve energy efficiency and reduce emissions designed. In this project, the researchers will utilize port/roadway network microscopic models (specifically for the Ports of Long Beach and Los Angeles) to evaluate different scenarios that utilize different forms of ECO-ITS technology. These truck-based ECO-ITS technologies will take advantage of real-time traffic sensing and telematics, allowing for a traffic management systems to better monitor truck traffic speed, density, and flow and then communicate information in real-time back to the vehicles. Based on the evaluation of the different ECO-ITS technologies, recommendations will be made for policies and practices that will reduce the use of fuel and reduce both greenhouse gas and pollutant emissions. These results will then be communicated to policy makers.
http://ncst.ucdavis.edu/project/ucd-cec-to-2-3

IATSS Research, Elsevier
Author: Jiang,Jian
A Factor Decomposition Analysis of Transportation Energy Consumption and Related Policy Implications
2015/03, volume 38, issue 2, pp 142-148
This paper introduces a method of factor decomposition analysis for analyzing the importance of the factors that affect the volume of transportation energy consumption. In choosing the influencing factors from the many possibilities, the paper introduces an indicator analysis to evaluate and select the most important affecting factors. Based on the decomposition results, the paper helps interpret the underlying causes of transportation energy consumption. At the same time, the paper also suggests corresponding policy implications for the improvement of transportation energy efficiency.
http://dx.doi.org/10.1016/j.iatssr.2014.10.001
http://www.sciencedirect.com/science/article/pii/S0386111214000296

Case Studies on Transport Policy, Elsevier
Author: Reis,Vasco
Author: Macário,Rosário
Promoting integrated passenger transport solutions using a business approach
2015/03, volume 3, issue 1, pp 66-77
In the 2011 White Paper on Transport, the European Commission calls for the provision of seamless passenger transport services across the European Union. The vision entails the integration of two transport systems that are quite independent of each other: the urban and interurban systems. Expectations of extensive integration amongst transport operators may, however, be unrealistic, since the risks (e.g.: the sharing of sensitive information) often offset the eventual benefits (e.g.: increased ridership). Indeed, the main beneficiaries of integration include the passengers (e.g.: through reduced travel times) and the society (e.g.: through a reduction in energy consumption), which is, in itself, justification enough for public intervention. However, recent economic turmoil has placed significant pressure on national budgets and exhausted most of the capacity for deploying financial incentives, making it necessary to come up with alternatives. In this paper the authors argue that transport operators could willingly integrate, as long as a business rationale is provided. Accordingly, achieving the European Commission's ambition depends on the ability to identify successful business models for integrated transport services. A business model describes a company's way of doing business and generating profits, by specifying its positioning in the value chain. The results of the investigation show the existence of a business rationale in the integration of transport services that could be exploited through implementation of an adequate business model. Based on the results of eleven case studies, the authors designed two business model prototypes. Each prototype is meant to overcome specific contextual barriers to integration: located at the transport links and at the nodes.
http://dx.doi.org/10.1016/j.cstp.2014.08.002
http://www.sciencedirect.com/science/article/pii/S2213624X14000467

NAHVERKEHR, ALBA-FACHVERLAG
Author: GASSEL,C
Author: SCHOENHERR,B
Author: MATSCHEK,T
Author: KRIMMLING,J
Steigerung der OEPNV-Qualitaet durch kooperative Ampelanlagen: Erfolgreiches Modellprojekt in Dresden mit den ersten Fahrerassistenzsystemen fuer Strassenbahnen / Optimizing the quality of public transport by cooperative traffic lights
2014, volume 32, issue 5, 20-5
Lichtsignalanlagen (LSA) haben grossen Einfluss auf die Qualitaet des Verkehrsablaufs insgesamt, aber auch auf den Energieverbrauch sich naehernder Verkehrsmittel. Die Technische Universitaet Dresden verfolgt verschiedene Pfade, zur Verringerung unnoetiger Halte an Lichtsignalanlagen (LSA). Schliesslich wurden zwei Strategien zur Reduktion des Energieverbrauchs vertieft untersucht. Energiesparen mit LSA-Steuerverfahren und mit einem Fahrerassistenzsystem. Als Forschungsergebnis wurde ein System entwickelt, in dem kooperative LSA verschiedene Anforderungen erfuellen. Ergaenzt wird das Steuerverfahren durch den erstmaligen Einsatz eines Fahrerassistenzsystems im Strassenbahnbetrieb (genannt COSEL), welches dem vorausschauenden und energieoptimalen Fahren dient. (A) ABSTRACT IN ENGLISH: Traffic lights have significant impact on traffic conditions at all, but also on energy consumption of approaching vehicles. The Dresden University of Technology is investigating several paths to reduce unnecessary stops at traffic lights. Finally, two energy saving strategies has been examined in depth: Energy savings by traffic signal control and by an onboard Driver Advisory System (DAS). As a result of research, a system was developed where cooperative traffic lights fulfil multi-model needs. Furthermore, the first DAS for energy efficient tramway control was designed, named COSEL. COSEL receives data about green phases from cooperative traffic lights and is already used in tramway operation. (A)

Author: Gu,Qing
Author: Ma,Fei
Author: Meng,Yu
Energy-efficient Optimization for Train Tracking Operation in Urban Rail Transit
2014/10, pp 834-839
This paper investigates energy-efficient operation for two tracking trains. The operation status of the leading train are combined into the optimization of operation for the following train. In this case, the energy-efficient tracking scenarios are studied and a new switching optimization thought for energy-efficient train tracking operation is proposed based on tracking scenarios analysis. Then by improving the energy-efficient operation optimization method for single train, the energy-efficient optimization method for train tracking operation is developed and analyzed. Simulation results show the feasibility and effectiveness of the new method.
Conference: 17th International IEEE Conference on Intelligent Transportation Systems (ITSC14)Institute of Electrical and Electronics Engineers (IEEE)China Association of AutomationQingdao Academy of Intelligent IndustriesState Key Laboratory of Management and Control for Complex SystemsXi'an Jiaotong University, ChinaInstitute of Automation,Chinese Academy of SciencesQingdao,China StartDate:20141008 EndDate:20141011 Sponsors:Institute of Electrical and Electronics Engineers (IEEE), China Association of Automation, Qingdao Academy of Intelligent Industries, State Key Laboratory of Management and Control for Complex Systems, Xi'an Jiaotong University, China, Institute of Automation,Chinese Academy of Sciences
http://dx.doi.org/10.1109/ITSC.2014.6957793

Author: Akena,p,'
Improving road transport energy efficiency through driver training
2014, 1 file
Fuel consumption by road vehicles is the most significant component of total road transport energy use and is significantly affected by driving style. This research was aimed at improving the effectiveness and efficiency of driver training for fuel economy for drivers involved in the management and operations of a road network in England. A unique approach to driver training was designed and tested with 94 drivers of heavy, medium and light vehicles. The improvement in fuel economy (in terms of MPG) for the first month after the training was observed to improve by up to 7%. The improvements reduced at varying rates after the training suggesting the need for regular refresher training. The behaviours of the drivers were also observed to change as a result of the training, towards styles more suited to achieving a better fuel economy. The results suggest that both linear and logarithmic models could be suited to predicting the drivers' performances and could be integrated in models of the type of HDM-4 which currently lack such capability. The driver training methodology was found to be more cost effective than the Safe And Fuel Efficient Driving (SAFED) training method recommended by the Department for Transport (DfT).
http://etheses.bham.ac.uk/5275/

Author: Guan,Tianyi
Author: Frey,C,W
Predictive fuel efficiency optimization using traffic light timings and fuel consumption model
ISSN: 9781479929146
2013/10, pp 1553-1558
Energy efficiency has become a major issue in trade, transportation and environment protection. While the next generation of zero emission propulsion systems are still under development, it is already possible to increase fuel efficiency in regular vehicles by applying a more fuel efficient driving behaviour. Fuel efficiency depends on vehicle specific characteristics, e.g. engine efficiency and transmission configuration. It also depends on current and future events in the environment, e.g. traffic lights or other traffic participants. This paper proposes an approach to make predictive use of traffic light timings while also incorporating knowledge about the vehicle's power-train. The optimization is largely based on dynamic programming. The results are a velocity and gear shift guidance for the driver to follow. Results based on simulations show that a system assisted driver can achieve significant fuel savings compared to an unassisted driver.
Conference: 16th International IEEE Conference on Intelligent Transportation Systems (ITSC)The Hague,Netherlands StartDate:20131006 EndDate:20131009
http://dx.doi.org/10.1109/ITSC.2013.6728451

Constanta Maritime University Annals, Constanta Maritime University
Author: Viorela-Georgiana,Stinga,(Cristea)
Intermodal Transport- A Way of Achieving Sustainable Development
2014, volume 22, pp 145-148
Through this paper the author tried to establish the important role of intermodal transport, but also the role of co-modal transport, concept that was introduced in 2006 by the European Commission, regarding the sustainable development. Both concepts refer to the efficient use of at least two modes of transport, with the difference that the second one takes also in consideration the optimal and sustainable utilization of resources. The author showed that in order to obtain sustainable development it is important to realize a diverse, multimodal transportation system. Within the study the author tried to present the benefits obtained by using the intermodal transport due to the transfer of freight to modes that generate less external effects.
http://www.cmu-edu.eu/anale/anale/2014-vol22/2014-an%2015%20vol%2022.pdf

TCRP Report, Transportation Research Board
Author: Gallivan,Frank
Author: Rose,Eliot
Author: Ewing,Reid
Author: Hamidi,Shima
Author: Brown,Thomas
Quantifying Transit's Impact on GHG Emissions and Energy Use-The Land Use Component
ISSN: 9780309308557
2015, issue 176, 109p
This report analytically examines the complex interrelationships between transit and land use patterns to better understand their contribution to compact development and the resulting greenhouse gas (GHG) reduction benefits. The report is accompanied by an Excel-based sketch-modeling tool ("calculator tool") that applies the research findings. The calculator tool estimates the land use benefits of existing or planned transit projects with a minimum amount of input data required. The report presents transit's impact on GHG emissions and energy use, including both the ridership effects and the land use effects; introduces and provides a user's guide to the calculator tool; identifies future research; and includes two technical appendices pertaining to the use of statistical models in this research. This research will be useful to transit agencies, planners, modelers, and researchers seeking to better understand and to quantify the impacts of transit service on compact development, energy use, and air quality in urbanized areas.
http://www.trb.org/Main/Blurbs/172110.aspx

Author: Alsabaan,M
Author: Naik,K
Author: Khalifa,T
Author: Nayak,A
Optimization of Fuel Cost and Emissions with Vehicular Networks at Traffic Intersections
ISSN: 9781467330640
2012/09, pp 613-619
The volatile world economy has greatly affected fuel prices, while pollution and gas emissions are increasing to negatively impact global warming. Vehicular networks offer a promising approach that can be applied in transportation systems to reduce fuel consumption and emissions. One of the interesting applications involves a traffic light signal sending information to approaching vehicles. Based on that information, the vehicle receiving the message adapts its speed to a speed called the recommended speed (SR), which is the speed that helps the vehicle to reduce fuel consumption and emissions. In this paper, the authors propose an optimization model with the objective of minimizing fuel consumption and emissions. The speed that can achieve this goal is the optimum SR. The authors also propose an efficient heuristic expression to compute near-optimal values of the optimum SR.
Conference: 15th International IEEE Conference on Intelligent Transportation Systems (ITSC2012)Anchorage,Alaska,United States StartDate:20120916 EndDate:20120919
http://dx.doi.org/10.1109/ITSC.2012.6338697

Author: Corti,A
Author: Manzoni,V
Author: Savaresi,S,M
Simulation of the Impact of Traffic Lights Placement on Vehicle's Energy Consumption and CO? Emissions
ISSN: 9781467330640
2012/09, pp 620-625
This paper proposes a method to estimate the impact of traffic light placement policies in term of vehicles' fuel consumption and CO? emissions. The method comprises two steps. First, speed profiles are generated representing vehicle's behavior. Then, the mechanical energy spent by the vehicle is computed. The estimation is then used to compare different policies of traffic light placement. Simulations have been carried out to analyze the impact of semaphores distributed into a real road. The relation between the number of traffic lamps and the energy spent is quantified. Finally, a sensitivity analysis is provided considering different classes of vehicles travelling on urban roads.
Conference: 15th International IEEE Conference on Intelligent Transportation Systems (ITSC2012)Anchorage,Alaska,United States StartDate:20120916 EndDate:20120919
http://dx.doi.org/10.1109/ITSC.2012.6338755

Author: Liu,Hao
Author: Wei,Heng
Author: Yao,Zhuo
Modeling ITS Data Sources for Generating Realistic Traffic Operating Parameters for Project-level Conformity Analysis
ISSN: 9781467330640
2012/09, pp 1912-1917
The challenge in characterizing on-road traffic source emissions affected by traffic management or control measures is often the lack of the realistic traffic flow data at the microscopic level for the project-level transportation conformity analysis. With the advancement of Intelligent Transportation Systems (ITS) technologies, more and more ITS devices are deployed for monitoring traffic. Those ITS devices provide promising data sources for inputs to the emission models for the project level analysis. Taking advantage of those data sources, this paper presents an integrated framework to facilitate the on-road transportation emission estimation under various traffic operations which are influenced by the traffic management and control measures. The implementation of the framework is demonstrated by applying the three components of the framework, i.e., traffic flow phase identification module, vehicle classification module and MOVES (Motor Vehicle Emission Simulator) analysis module, in a case study where inductive loop data are utilized. The information provided by the framework can help traffic operation agency improve or develop efficient traffic management or control measures for energy saving and environment protection.
Conference: 15th International IEEE Conference on Intelligent Transportation Systems (ITSC2012)Anchorage,Alaska,United States StartDate:20120916 EndDate:20120919
http://dx.doi.org/10.1109/ITSC.2012.6338876

Author: Nakazawa,M
Author: Fukuda,A
Author: Okamura,M
Author: Suzuki,H
Impact of Introducing Signal Recognition Enhancement System on Traffic Flow at Signalized Intersection
ISSN: 9781467330640
2012/09, pp 1306-1309
The Signal Recognition Enhancement System (SRES) is one of practical Intelligent Transportation System (ITS) which is expected to avoid rear-end collisions at a signalized intersection by providing signal information to a vehicle and/or a driver before reaching an intersection. This system is also expected to suppress the unnecessary fuel consumption and reduce CO? emissions. This paper aims to evaluate the impact of the SRES which will be installed at signalized intersections. The authors develop the micro traffic simulation model which includes the behavior of a driver with/without SRES to estimate the impact SRES on the traffic flow around an intersection. The authros employed the time integral of difference of space distance and stopping distance or TIDSS as the indicator for measurement of safety, while the authors employed the equations to calculate fuel consumption and CO? based on an average velocity. Numerical simulation showed that SRES might help to reduce collision, fuel consumption and CO? emissions at signalized intersections.
Conference: 15th International IEEE Conference on Intelligent Transportation Systems (ITSC2012)Anchorage,Alaska,United States StartDate:20120916 EndDate:20120919
http://dx.doi.org/10.1109/ITSC.2012.6338626

Author: Tsai-Yun,Liao
Author: Wei Ming,Ho
Author: Hu,Ta-Yin
Fuel consumption and emission models development and application for advanced traffic management strategies
ISSN: 9781467330640
2012/09, pp 846-851
Due to the development of industry and commerce, the percentage of fuel consumptions and emissions of the transport sector is increasing in recent years. As a result, the levels of CO₂ and other emissions have worsened the environment, and thus global-warming and air-pollution issues need to be incorporated within the planning and operation of transportation system. This research proposes two energy consumption and emission models for mixed traffic flows under a wide variety of advanced traffic management strategies. These two models are defined as the link-based and the trip-based fuel consumption and emission model. The link-based model is developed based on link characteristics, including static and dynamic attributes of the link, such as link length, number of vehicles, and average speed on links. The trip-based model calculates fuel consumption and emission based on trip characteristics, such as vehicle movement trajectory. These two models are integrated with a simulation-assignment model, DynaTAIWAN. Numerical experiments are conducted to illustrate the proposed models. Traffic management strategies, including real-time information and advanced traffic control systems, are evaluated based on the performance of fuel consumption and emission. The experiment results show the models are robust and advanced traffic management strategies can indeed reduce fuel consumption and CO₂ emission.
Conference: 15th International IEEE Conference on Intelligent Transportation Systems (ITSC2012)Anchorage,Alaska,United States StartDate:20120916 EndDate:20120919
http://dx.doi.org/10.1109/ITSC.2012.6338747

Transportation Research Part D: Transport and Environment, Elsevier
Author: Zhou,Xuesong
Author: Tanvir,Shams
Author: Lei,Hao
Author: Taylor,Jeffrey
Author: Liu,Bin
Author: Rouphail,Nagui,M
Author: Frey,H,Christopher
Integrating a simplified emission estimation model and mesoscopic dynamic traffic simulator to efficiently evaluate emission impacts of traffic management strategies
2015/06, volume 37, pp 123-136
This paper presents a computationally efficient and theoretically rigorous dynamic traffic assignment (DTA) model and its solution algorithm for a number of emerging emissions and fuel consumption related applications that require both effective microscopic and macroscopic traffic stream representations. The proposed model embeds a consistent cross-resolution traffic state representation based on Newell's simplified kinematic wave and linear car following models. Tightly coupled with a computationally efficient emission estimation package Motor Vehicle Emissions Simulator (MOVES) Lite, a mesoscopic simulation-based dynamic network loading framework DTALite is adapted to evaluate traffic dynamics and vehicle emission/fuel consumption impact of different traffic management strategies.
http://dx.doi.org/10.1016/j.trd.2015.04.013
http://www.sciencedirect.com/science/article/pii/S1361920915000450

Transportation Research Part D: Transport and Environment, Elsevier
Author: Ölçer,A
Author: Ballini,F
The development of a decision making framework for evaluating the trade-off solutions of cleaner seaborne transportation
2015/06, volume 37, pp 150-170
The general rise in marine fuel prices in combination with ever-more stringent environmental regulations resulting from International Maritime Organization (IMO) conventions and European Union (EU) Directives have become the main industry drivers for seaborne transportation to become cleaner and more energy efficient. Compliance with existing and soon-to-be-enacted regulations requires evaluating the trade-off between often-conflicting options to select the best available technology or fuel source. Although the traditional way of dealing with this issue has been to apply a cost benefit analysis, this kind of analysis does not adequately consider the complexities of the problem, such as incorporating linguistic preferences or interrelations amongst attributes, experts and their preferences. The challenge in such an analysis corresponds to that of a multiple attribute decision-making problem in which a finite number of alternatives are assessed with regards to a finite number of attributes and experts and ranked from the best to the worst. In this paper, a comprehensive and holistic decision-making framework is proposed to overcome the barriers of cost-benefit analysis techniques, facilitating the inclusion of all possible combinations of decision-making parameters and their discrete values, which will eventually help the industry achieve cleaner seaborne transportation. To demonstrate the applicability of the proposed framework, this paper focuses on a real-life study case involving an environmental compliance problem in the Port of Copenhagen, Denmark, in relation to a particular EU Directive. In conclusion, the proposed framework can be applied as a generalised decision-making model to similar compliance issues encountered within other modes of transportation such as rail and road.
http://dx.doi.org/10.1016/j.trd.2015.04.023
http://www.sciencedirect.com/science/article/pii/S1361920915000553

Transportation Research Part C: Emerging Technologies, Elsevier
Author: Stevanovic,Aleksandar
Author: Stevanovic,Jelka
Author: So,Jaehyun
Author: Ostojic,Marija
Multi-criteria optimization of traffic signals: Mobility, safety, and environment
2015/06, volume 55, pp 46-68
Two-dimensional multi-objective optimizations have been used for decades for the problems in traffic engineering although only few times so far in the optimization of signal timings. While the other engineering and science disciplines have utilized visualization of 3-dimensional Pareto fronts in the optimization studies, the authors have not seen many of those concepts applied to traffic signal optimization problems. To bridge the gap in the existing knowledge this study presents a methodology where 3-dimensional Pareto Fronts of signal timings, which are expressed through mobility, (surrogate) safety, and environmental factors, are optimized by use of an evolutionary algorithm. The study uses a segment of 5 signalized intersections in West Valley City, Utah, to test signal timings which provide a balance between mobility, safety and environment. In addition, a set of previous developed signal timing scenarios, including some of the Connected Vehicle technologies such as GLOSA, were conducted to evaluate the quality of the 3-dimensional Pareto front solutions. The results show success of 3-dimensional Pareto fronts moving towards optimality. The resulting signal timing plans do not show large differences between themselves but all improve on the signal timings from the field, significantly. The commonly used optimization of standard single-objective functions shows robust solutions. The new set of Connected Vehicle technologies also shows promising benefits, especially in the area of reducing inter-vehicular friction. The resulting timing plans from two optimization sets (constrained and unconstrained) show that environmental and safe signal timings coincide but somewhat contradict mobility. Further research is needed to apply similar concepts on a variety of networks and traffic conditions before generalizing findings.
http://dx.doi.org/10.1016/j.trc.2015.03.013
http://www.sciencedirect.com/science/article/pii/S0968090X15000923

Advances in Transportation Studies, University Roma Tre
Author: De Blasiis,M,R
Author: Di Prete,M
Author: Guattari,C
Author: Veraldi,V
Author: Chiatti,G
Author: Palmieri,F
The Effects of Traffic Flow Conditions on the Pollutants Emissions: A Driving Simulator Study
2014, volume 2, issue Special Issue, pp 59-70
In the last 20 years the attention of international organizations towards air pollution has been improved, leading to definition of laws and regulations. In order to evaluate strategies and policies, forecasting tools have been adopted by institutions. Mainly, two groups of emission models are available: the former is represented by the static or “standard” models, in which the amount of pollutant is computed as a function of average parameters; the latter is represented by the dynamic models, where the amount of pollutant is computed as a function of instantaneous parameter, such as instantaneous speed or acceleration. The well-known traffic increase of the recent years has significantly changed the actual flow conditions, producing a strong rise of interferences. As this facet affects the operating condition of each vehicle, the use of a standard emission models at high traffic interference can lead to some inaccuracies. In such cases, instantaneous emission models introduce deeper capabilities; essentially, the pollutant prediction is directly tied to the engine vehicle operation point in real-like traffic condition. However, this approach requires a large amount of input data (i.e. video recordings or remote sensing analysis), which are not always available. In order to overtake such a difficulty, the present study is based on an integrated simulation tool. Emissions from road traffic are simulated through a dynamic model, whose input data are obtained by the output of virtual reality simulation. Indeed, the analysis took advantage of the experiments carried out in the vehicle virtual reality laboratory: on typical highway geometry, three different flow conditions have been simulated. Investigations have highlighted the dependence of emission level and fuel consumption on drivers’ behavior. The comparison between a gasoline and a diesel compact passenger car in terms of pollutant emissions and fuel consumption has been also reported. In order to assess the differences between static and instantaneous emission models, a comparative analysis has been carried out.

Author: Maddox,John
Author: Sweatman,Peter
Author: Sayer,Jim
Intelligent Vehicles + Infrastructure to Address Transportation Problems - A Strategic Approach
2015, 12p
Transportation systems around the world are showing signs of strain, and safety, congestion, and energy usage are significant societal problems. In the past, transportation professionals have attempted to solve these problems through largely “siloed” approaches focused on vehicle crashworthiness, infrastructure design, or energy efficiency. These separate approaches have had success, however transportation problems continue to grow. The University of Michigan has formed the Mobility Transformation Center (MTC) to create a consortium of industrial, government, and academic partners who comprise an ecosystem for enabling a future transportation system that leverages connected and automated technologies. This group has convened to define a potential ecosystem, identify and prioritize key research needs for enabling a holistic approach, identify key technology and policy hurdles with paths forward, identify business drivers and opportunities, as well as identify gaps in standards, testing, facilities, and risk management schemes. A key goal is to lay a foundation for, and demonstrate, a commercially viable connected and automated transportation system in Ann Arbor by 2021. To achieve these goals, MTC is designing, building, and deploying significant test beds, facilities, and deployments so that real-world results can be incorporated into this process in a rapid fashion. This paper presents a summary of current status and early results of this effort, to the extent that they are ready for dissemination. This includes a description of the role various industrial sectors may play in a future transportation system, as well as identified first-level research gaps. Included is a high-level description of strengths and weaknesses of various technologies (vehicle sensors and communication, infrastructure sensors and communication, infrastructure operating systems, data systems, etc.) and their ability to address key transportation problems and opportunities. Lastly, a summary of the current status of the physical test beds and deployments will be included. The authors seek to further the discussion of the potential roles various transportation system components and industrial sectors, as well as the roles for government and academia. Additionally, the authors hope to generate meaningful discussion on the importance of a systems approach to solving key transportation problems, including proper technology planning, evaluation and deployment to ensure that results address the widest range of societal needs as possible.
Conference: 24th International Technical Conference on the Enhanced Safety of Vehicles (ESV)National Highway Traffic Safety AdministrationGothenburg,Sweden StartDate:20150608 EndDate:20150611 Sponsors:National Highway Traffic Safety Administration
http://www-esv.nhtsa.dot.gov/Proceedings/24/isv7/main.htm

Journal of Public Transportation, University of South Florida, Tampa
Author: Ewing,Reid
Author: Tian,Guang
Author: Spain,Allison
Author: Goates,J,P
Effects of Light-Rail Transit on Traffic in a Travel Corridor
2014, volume 17, issue 4, pp 93-113
An important debate is taking place over the value of transit in easing traffic congestion. This study sought to quantify the effect of light rail transit (LRT) on traffic in a travel corridor and provide quantitative data that can be used to shape future transportation policies aimed at reducing traffic congestion, energy consumption, and air pollution. Using a quasi-experiment design and data before and after the University of Utah's TRAX LRT line was opened, we estimated that traffic on the street with LRT (400/500 South) decreased by 7,500 to 21,700 due to the availability of a high-quality transit serving destinations along the line, and, most important, the University of Utah. Traffic on 400/500 South decreased despite significant development in the corridor and expansion of the university. Based on the authors' estimates, LRT along 400/500 South saves about 362,000 gallons of gasoline and prevents about 7 million pounds of CO2 from being emitted each year.
http://scholarcommons.usf.edu/jpt/vol17/iss4/7/

Author: He,Han
Author: Jiang,Tao
Author: Zhao,Hongpeng
Author: Li,Jiangchen
Author: Qiu,Tony ,Z
Author: Hu,Yu
An Energy-Efficient Vehicle Detection Algorithm for a Complex Urban Traffic Environment
ISSN: 9780784479292
2015/07, pp 332-341
Magnetometer-based sensors have been proven to be an effective method for vehicle detection in intelligent traffic systems (ITS). Many algorithms have been proposed to improve the performance of magnetometer-based traffic sensing. However, few studies consider the effectiveness of these algorithms in context with a high-density traffic flow, which is typical in urban areas of developing countries such as China. In addition, the energy-efficiency of the existing algorithms has been largely ignored, hence limiting the application of the battery-powered sensor network in practice. Considering both high-density traffic flow and energy-efficiency, this paper presents a real-time vehicle detection algorithm using magnetometers. The proposed algorithm first assesses the data after the noise removal, and extracts a set of magnetic features from these data. The extracted features are then fed into a finite state machine with self-adaptive parameters. The proposed algorithm has been implemented in an embedded processor manufactured by Texas Instruments, and a wireless sensor network carrying sensor nodes running the authors proposed algorithms is deployed as the test bed in several major roads inside and outside the Huazhong University of Science and Technology campus. Tested by 6 traffic flow datasets collected during rush-hour, the results show that the authors algorithm can achieve 91% or above detection accuracy under complex urban traffic environment.
Conference: 15th COTA International Conference of Transportation ProfessionalsChinese Overseas Transportation Association (COTA)Beijing Jiaotong UniversityTransportation Research BoardInstitute of Transportation Engineers (ITE)American Society of Civil EngineersBeijing,China StartDate:20150724 EndDate:20150727 Sponsors:Chinese Overseas Transportation Association (COTA), Beijing Jiaotong University, Transportation Research Board, Institute of Transportation Engineers (ITE), American Society of Civil Engineers
http://dx.doi.org/10.1061/9780784479292.030

Design and Evaluation of Impact of Traffic Light Priority for Trucks on Traffic Flow
Under this project the plan is to investigate the impact of giving priority to trucks at traffic lights not only on the travel time of trucks but also on the travel time of passenger vehicles. The concept is similar to that of giving priority to buses even though the motivation for doing so for trucks is different. By timing the traffic signals to give priority to trucks when trucks are present we can achieve two benefits. First the trucks will clear the intersection faster without having to make frequent stops that introduce additional delays due to the time it takes for a truck to accelerate from zero speed to a desired speed and second the less decelerations/accelerations a truck goes through the less pollution it generates and the less fuel it consumes. Such traffic light priority may also have beneficial effect on the travel time of passenger vehicles due to elimination of delays caused by trucks stopping and going. The project analysis is to reveal these benefits and possible tradeoffs.
http://www.metrans.org/research/design-and-evaluation-impact-traffic-light-priority-trucks-traffic-flow

Field Implementation and Testing Eco-Traffic Signal System Applications
The objective of this research effort is to apply earlier promising eco-traffic signal system research results that were demonstrated in simulation environments to develop a prototype for an eco-traffic signal system and to showcase how such a system can be implemented in the field using the current traffic control technology. As part of the eco-traffic signal system prototype, a secure and survivable data exchange architecture will be developed and tested to facilitate successful system implementation in the field. In addition, simulation analysis will be extended to study the effect of traffic network configuration and structure and traffic demand profiles on the eco-traffic signal system performance and benefits. The eco-traffic signal system developed as part of this project is capable of receiving connected-vehicle data (vehicle location, speed, type) using 5.9 GHz dedicated short range communication (DSRC). It also communicates with the traffic controller on a real-time basis using the National Transportation Communications for Intelligent Transportation System Protocol (NTCIP) communication protocol. The eco-traffic signal system developed in this project has several innovations. First, the system operates and achieves its potential using current traffic controller and controller cabinet technologies. Second, the system is compatible with applications within the Federal Highway Administration's (FHWA's) connected-vehicle initiative. Third, minimal hardware, in addition to traffic controllers, is required for full system implementation. Fourth, computer driven algorithms are used to implement traffic signal control decisions using connected-vehicle data. Furthermore, the proposed system architecture employs two revolutionary software design approaches: design for survivability and software performance measurement at the task level. The research should result in a highly practical set of guidelines to improve signal timing procedures and arterial operations to reduce fuel consumption and vehicular emissions. The project supports Tranlive's Goal 1: Integrate real-time data systems and advanced transportation applications to better manage congestion while minimizing environmental impacts - Strategy 1.3: Develop infrastructure control strategies for eco-traffic signal system applications.
http://tranliveutc.org/engr/niatt/tranlive/projects/2013/field-implementation-and-testing-eco-traffic-signal-system-applications

IEEE Transactions on Intelligent Transportation Systems, Institute of Electrical and Electronics Engineers (IEEE)
Author: Ning,Bin
Author: Xun,Jing
Author: Gao,Shigen
Author: Zhang,Lingying
An Integrated Control Model for Headway Regulation and Energy Saving in Urban Rail Transit
2015/06, volume 16, issue 3, pp 1469-1478
In an urban rail transit system, issues regarding headway regulation have aroused wide attention. The assurance of headway regularity can decrease train delay times and average passenger waiting times. An integrated control method is proposed to optimize train headway by adjusting the train arrival time at stations. The adjustment of train arrival time is achieved by using an analytical method, and then the speed profile for each train is calculated by a suboptimal method, which has been applied in a practical system. Through simulation, the CPU time for calculating optimal train arrival time and speed profile is analyzed, respectively. The analysis demonstrates that the proposed method satisfies the real-time requirements for solving the headway regulation problem. By adopting the proposed method, the average passenger waiting time and the energy consumption can be decreased. In particular, the proposed method has better performance when the dispatch headway is large.
http://dx.doi.org/10.1109/TITS.2014.2366495

Transportation Science, Institute for Operations Research and the Management Sciences
Author: Osorio,Carolina
Author: Nanduri,Kanchana
Energy-Efficient Urban Traffic Management: A Microscopic Simulation-Based Approach
2015/08, volume 49, issue 3, pp 637-651
Microscopic urban traffic simulators embed the most detailed traveler behavior and network supply models. These simulators represent individual vehicles and can therefore account for vehicle-specific technologies. They can be coupled with instantaneous fuel consumption models to yield detailed network-wide fuel consumption estimates. Nonetheless, there is currently a lack of computationally efficient optimization techniques that enable the use of these complex integrated models to design sustainable transportation strategies. This paper proposes a methodology that combines a stochastic microscopic traffic simulation model with an instantaneous vehicular fuel consumption model. The combined models are embedded within a simulation-based optimization algorithm and used to address a signal control problem that accounts for both travel times and fuel consumption. The proposed technique couples detailed, stochastic, and computationally inefficient models, yet is an efficient optimization technique. Efficiency is achieved by combining simulated observations with analytical approximations of both travel time and fuel consumption. This methodology is applied to a network in the Swiss city of Lausanne. Within a tight computational budget, the proposed method identifies signal plans with improved travel time and fuel consumption metrics. It outperforms traditional methodologies, which use only simulated information or only analytical information. The case study illustrates the added value of combining simulated and analytical information when performance metrics with high variance, such as fuel consumption, are used. This method enables the use of disaggregate instantaneous vehicle-specific information to inform and improve traffic operations at the network-scale.
http://dx.doi.org/10.1287/trsc.2014.0554
http://pubsonline.informs.org/doi/abs/10.1287/trsc.2014.0554

Author: Boriboonsomsin,Kanok

Reducing the Carbon Footprint of Freight Movement through Eco-Driving Programs for Heavy-Duty Trucks

2015/06, 15p

Eco-driving involves fuel efficient driving techniques and maintenance practices. Truck eco-driving may provide economic or other incentives to drivers to avoid heavy traffic, drive at moderate speeds, avoid sudden braking or acceleration, reduce idling, and maintain specified tire inflation. Truck eco-driving can reduce fuel consumption and greenhouse gas emissions by 5-15%. Educating drivers is a crucial component of eco-driving programs. Other components include vehicle maintenance and technology support, such as speed limiters, and policy support, such as subsidies for engine retrofitting or incorporating eco-driving into the commercial driver's license process.

http://ncst.ucdavis.edu/wp-content/uploads/2014/08/06-25-2015-NCST_WP_Truck-eco-drivingFINAL-2.pdf

https://merritt.cdlib.org/d/ark%3A%2F13030%2Fm54b5rqg/1/producer%2FNCST201506.pdf

Journal of Marine Science and Technology, Springer Japan

Author: Solem,Siri

Author: Fagerholt,Kjetil

Author: Erikstad,Stein,Ove

Author: Patricksson,Øyvind

Optimization of Diesel Electric Machinery System Configuration in Conceptual Ship Design

2015/09, volume 20, issue 3, pp 406-416

In this paper an optimization based decision support model for determining diesel electric machinery system configuration in conceptual ship design is presented. Load distribution on the engines is considered in the model to ensure that required demand is met with sufficient power supply for all future operational states. A method for fuel consumption calculation is presented, based on determining optimal load distribution amongst the engines related to each engines generalized specific fuel consumption curve. Total fuel costs and appropriate NO? taxes are calculated based on the ship's future operational profiles. A case study is presented to exemplify the use of the model. Results show that the model might be used to obtain valuable insight to expected operational costs and decision support for selecting machinery system configuration.

http://dx.doi.org/10.1007/s00773-015-0307-4

R / Department of Shipping and Marine Technology, Chalmers University of Technology, Chalmers University of Technology
Author: Johnson,Hannes
Towards understanding energy efficiency in shipping
2013, issue 142, 88
There is a great interest in increasing energy efficiency in shipping amongst many stake-holders. Shipping companies are looking for ways to reduce costs, and policy-makers internationally, regionally and nationally are looking for ways to cut greenhouse gas (GHG) emissions. At first glance, this looks like a win-win situation. Assessments show a large cost-efficient, potential for improvement. However, these also show that even if all cost-effective measures were to be implemented, GHG emissions from shipping will still increase. The continued exponential growth of economies depends on international trade, which in turn will need to be facilitated by an exponentially growing shipping sector. Moreover, it is puzzling that such a potential could exist at all. What is keeping the shipping industry from harnessing the potential? The same situation has been shown to exist in many sectors and is usually referred to as an energy efficiency gap. It has been attributed to failures and barriers in markets, institutions and organizations. This PhD project is an attempt to understand this gap between reality and what should be cost-effective, through studies of energy management practices in shipping companies. In Paper I, the shipping sector is placed in the context of previous research, based on semi-structured interviews with different stakeholders mainly in the Swedish shipping sector. The main strategy of this research project was to create a collaborative project together with shipping companies on implementing an energy management systems in their respective organizations. What is it that shipping companies have to be good at in order to improve? A participatory role from academia, an action research approach, was chosen. This was both to gain project acceptance in the companies, and because other researchers have highlighted it when trying to understand change processes. The aim was to publish selected problems as case studies. The first case study, paper II, discusses aspects such as project management abilities, measurements, division of responsibilities, competence and communication in the context of effective energy management. Policy instruments have already been created as an attempt to increase energy efficiency in shipping. One of these, the Ship Energy Efficiency Management Plan (SEEMP) is aiming at encouraging better practices on board ships. Based on similar instruments and previous research, Paper III discusses gaps in the SEEMP guideline. This licentiate thesis itself is an attempt to put the results and arguments of the pa-pers in a wider context. It can also be seen as a quest for increasing the author’s own understanding of the problem. The role of increased transparency on energy performance is highlighted for improving firm performance, but also for enabling commercial gain in markets for more energy efficient ships and operational practices are highlighted. The role of an energy management organization in a shipping company is also discussed. Finally, the thesis can also be seen as an attempt to entice other researchers to perform further studies in this vast, and for future generations crucial, problem field.
http://publications.lib.chalmers.se/publication/173631-towards-understanding-energy-efficiency-in-shipping

Doktorsavhandlingar vid Chalmers tekniska högskola. Ny serie
Author: Marklund,Jesper
Under-body and diffuser flows of passenger vehicles
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2013, issue 3547, 70
Energy efficient vehicles will be required to meet future emission and fuel consumption requirements. Customers require reduced fuel consumption due to increasing fuel prices and the environmental issues, are drivers to reduce CO2. It is essential to improve the drivelines, but improving resistance forces of the vehicle is also an efficient and sustainable way to improve energy efficiency. Aerodynamic drag is the dominating resistance force for passenger and commercial vehicles at highway speeds. A passenger car is a bluff body aerodynamically, with pressure forces at the rear that dominate the aerodynamic drag. This is due to a relatively square shape, with a length / height ratio of approximately three, and a truncated rear-end that generates a wake. About 60 % of the aerodynamic drag forces of a passenger vehicle are related to the exterior body, upper and under-body; the rest being related to wheel, wheel house and cooling drag. This work focuses on the aerodynamics of the rear-end and under-body of bluff bodies in general, but also applied to passenger cars. Firstly, simplified bluff bodies, that represent different vehicle types, were used to study and map the general behaviour of the bodies. The findings were then tested and applied to full?size vehicles, with the focus on under-body flows and the effect of under-body diffusers. Both experimental and numerical tools were used, and scale model as well as full-size test bodies have been investigated. A unique feature with road vehicle aerodynamics are the boundary conditions: ground proximity and moving ground; relative the body. Also, rotating wheels and a cooling flow that re-distributes the flow around the body have to be considered. The Chalmers L2 wind tunnel is equipped with a moving ground system, and the simulations were set up with moving ground, rotating wheels and a cooling flow. The rotating wheels were simulated with the MRF approach and the cooling flow was tuned by measuring the cooling flow of a full-sized car and using this data in the simulations. A significant difference in the flow in an under-body diffuser, depending on upper body, was noticed in the bluff body experiments. In particular, drag was reduced more for a sedan or fastback upper body, compare to a wagon or square-back. This difference was confirmed in simulations of full?size vehicles, under road-vehicle boundary conditions, with under-body diffusers applied. It was found that it is very important to have flow symmetry around the vehicle and especially at the wake, to optimize pressure recovery at the rear end and reduce drag.
http://publications.lib.chalmers.se/publication/177366-under-body-and-diffuser-flows-of-passenger-vehicles

PROJEKTREFERENSER

FORSKNINGSÖVERSIKT ÖVER AVSLUTADE EU-PROJEKT

Thematic research summary: Climate policy and energy efficiency
Stoyanov, Dimitar; Chakarova, Kristiana; Dimitrov, Petko
http://www.transport-research.info/Upload/Documents/201504/20150430_165733_97818_TRS16_fin.pdf
The EU climate and energy package 2020 sets the following objectives for 2020:

- 20% reduction in greenhouse gas emissions on 1990 levels;
- 20% of energy used is from renewable sources;
- 20% improvement in energy efficiency.

The EU vision on tackling the challenges of climate change is presented in the long-term Roadmap for moving to a competitive, low-carbon economy by 2050. Transport together with power generation, industry, agriculture and construction are identified as the key sectors responsible for CO2 emissions in Europe. The plan presents milestones for achieving the goal of 40% reduction in EU CO2 emissions below 1990 levels by 2030, 60% by 2040, and 80% by 2050. The Green Paper (EC, 2013) confirms the three targets: - reduction of greenhouse gas emissions; - use of renewable energy; - energy saving. Parallel to these, EU policy is to ensure that the energy system contributes to the competitiveness of the EU economy and to making energy more affordable to consumers. The Transport White Paper (EC, 2011) stresses the need to reduce emissions and to cut dependency on fossil fuels. A key challenge is to break transport dependence on oil without reducing transport efficiency and without curbing mobility. Two key approaches to achieving these objectives have been identified:

- Improving the energy efficiency of vehicles in all transport modes;
- Developing and deploying sustainable fuels and propulsion systems.

EU-funded research supports developing and deploying new energy-efficient and low-emission technologies for vehicles, vessels and aircraft. This requires R&D investment in innovative propulsion systems to reduce emissions and fuel consumption. Research has been carried out on improving internal combustion engines, classic powertrains, exhaust gas after-treatment technologies and on-board energy management. Research has also focused on extending the use of alternative fuels, such as biofuels, hydrogen and electricity. Another focus in sustainable transport is improving the overall efficiency and addressing issues such as driving behaviour, efficient trip planning, traffic management, promotion of multimodal transport and the use of environmentally friendly transport modes. Appropriate management strategies and actions are being developed to achieve EU targets with regard to climate change and energy policy. EU-funded research focuses on statistical analysis and assessment of various scenarios, development of simulation models and impact assessment tools, establishing knowledge platforms and dissemination campaigns.

Research projects presented in this Thematic Research Summary are grouped in two sub-themes:

- Reducing transport emissions;
- Improving energy efficiency.

European Commission. Directorate-General for Mobility and Transport, DG MOVE
Brussels, 24 s, 2014

PÅGÅENDE ELLER NYLIGEN AVSLUTADE EU-PROJEKT INOM DET SJUNDE RAMPROGRAMMET (”7TH RTD FRAMEWORK PROGRAMME”)

CLOSER - **Connecting LOng and Short-distance networks for Efficient tRansport**. Final report, 2012.
Full text report

CITYLOG - Sustainability and efficiency of city logistics, 2013. Final report. Full text report

ULYSSES – the ultra slow ship of the future, 2012(?). Full text report

SuperGreen - supporting EU’s freight transport logistics action plan on green corridors issues.
Green Corridors Handbook. Volume I, 2013. Full text report
Green Corridors Handbook. Volume II, 2013. Full text report

Poly-SUMP. Planning together Sustainable Mobility in Polycentric Regions, 2014. Full text report

TEFLES - Technologies and Scenarios For Low Emissions Shipping.
Report on the state of the art ship docked in port scenario, 2012. Full text report
State of the art and efficiency report, 2011. Full text report

Cyclelogistics – moving Europe forward. Potential to shift goods transport from cars to bicycles in European cities, 2013. Full text report

TARGETS – Targeted Advanced Research for Global Efficiency of Transportation Shipping. Final public report, 2014. Full text report

ECOSTARS - Efficient Cleaner Operation Stars. Final report, 2014. Full text report

GREEN EFFORTS - Green and Effective Operations at Terminals and in Ports. Final report summary, 2014. Full text of summary

USEMOBILITY - Understanding social behaviour for eco-friendly multimodal mobility. Why do travellers in Europe change transport mode? Facts and implications for policy and providers, 2013.
Full text report
More reports from the project

INOMANS²HIP - INOvative Energy MANagement System for Cargo SHIP. 2011-2014
Link to website

KITVES - Airfoil-based Solution for Vessel On-board Energy Production Destined to Traction and Auxiliary Services. 2008-2012
Link to website

COFRET - Carbon footprint of freight transport. 2011-2013
Link to website

Straightsol - STRAtegies and measures for smarter urban freIGHT SOLutions, 2014. Final report summary

Tellisys - Intelligent Transport System for Innovative Intermodal Freight Transport. 2011-2014
Link to web site

Merlin - Sustainable and intelligent management of energy for smarter railway systems in Europe: an integrated optimisation approach. 2012-2015
Link to website

Reducing the Demand for Travel: Mobile and Flexible Working Programmes, MVA Consultancy Ltd Scottish Government 2013. Full text report

Core – CO^2 REduction for long distance transport. 2012-2015
Link to website

BB Green - Battery powered Boats, providing Greening, Resistance reduction, Electric, Efficient and Novelty. 2011-2014
Link to website

OSIRIS - Optimal Strategy to Innovate and Reduce energy consumption In urban rail Systems. 2012-2014
Link to website

MARATHON - Make Rail The Hope for protecting Nature. The MARATHON 1500m Train Opening up new horizons in Rail Freight Transport in Europe, 2014. Full text handbook

NAVTRONIC - Navigational System for Efficient Maritime Transport. 2009-2012
Link to website

STREAMLINE - Strategic Research For Innovative Marine Propulsion Concepts. 2010-2014
Link to website

TRIPOD - TRIple Energy Saving by Use of CRP, CLT and PODded Propulsion
Final report 1. Application of CFD tools to the development of a novel propulsion concept Full text report
Final report 2. TRIPOD: The development of a Novel Propulsion Concept Full text report

GRIP - Green Retrofitting through Improved Propulsion, 2011-2014
Link to website

TOSCA - Technology Opportunities and Strategies towards Climate-friendly Transport
Final report, 2011. Full text report

HYMAR - High Efficiency Hybrid Drive Trains for Small and Medium Sized Marine Craft. 2009-2012
Link to website

HERCULES-C - Higher Efficiency, Reduced Emissions, Increased Reliability and Lifetime, Engines for Ships
Link to website

INFORMATIONSSÖKNINGAR PÅ UPPDRAG

BIC, Bibliotek och informationscenter vid VTI, Statens väg- och transportforskningsinstitut, är en nationell resurs för informationsförsörjning och informationsspridning inom transportforskningsområdet.

BIC utför informationssökningar på uppdrag inom ämnesområdena trafik, trafikanter, transporter och transportinfrastruktur. Sökresultaten är vanligtvis referenser till publicerade forskningsresult och andra relevanta publikationer samt information om forskningsprojekt, både pågående och avslutade, men kan även vara länkar till webbplatser och organisationer m.m.

För mer information kontakta Hillevi Nilsson Ternström