CityLogistics:
International Experience of Urban Logistics Projects, with Reference to Classification and Evaluation

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By: Ali Beittoei

Supervisor: Björn Frostell

1. Aims and Objectives

This short paper is intended to form a basis for the development of an urban logistics improvement initiative for the Stockholm Royal Seaport Project (SRSP). The objective is to provide Royal Seaport project advisors a grounding framework of international experience and examples in order to define, design, and implement a logistics improvement scheme. The areas of focus are related to improving (i) supply logistics of aggregates during construction phase of city projects and (ii) logistics of goods during operation phase.

The main body of this paper consists of 4 parts:

- A gross list of international urban logistics improvement projects
- Methods for classifying and evaluating urban logistics projects
- Lessons learned and challenges for Logistics Centers
- A more detailed analysis of 2 higher-profile projects that best meet the requirements of (i) high environmental and sustainability profile and (ii) high quality of documented evidence and peer-reviewed analysis.

2. Scope

In order to form a constructive basis for future work relevant to SRSP, the scope of this study is limited to initiatives within the last 10 years carried out on specific districts or projects within large metropolitan cities, or across smaller scale towns and villages.

3. Methodology

Reports and articles published by organizations, municipalities, committees, and evaluation consultants form the basis of the researched material, followed by published articles from peer-reviewed journals.

4. City Logistics Improvement Projects

Appendix A outlines a list of projects researched for this paper, based on cities, together with descriptions for each project as well as reference to where more detailed analysis and description can be found. The projects listed are ones where a suitable level of useful information could be found. Projects that did not have clear descriptions were omitted. Cities marked with a (*) are those which more detailed evaluation reports have been conducted. Refer to the “Source” column for reference to the detailed reports.

Bejenloun et al. (2010) conducted a survey of City Logistics projects from around the world from 1976-2007 and found over 100 projects, with 70 that had “pertinent and useful information” available. The table below gives a count by country:

Country	Germany	Denmark	Spain	France	Holland	Italy	Japan
# Projects	13	2	5	9	8	8	4
Country	Norway	Portugal	U.K	Slovenia	Sweden	Switzerland	
# Projects	3	1	10	1	5	1	

(Bejenloun et al, 2010)

The main activities were found to be in Western Europe and Japan. Germany, UK, Netherlands, Italy, and Sweden have been the leaders in Europe.

4.1 Projects in Asia

There have been a number of "green" cities and districts initiated in China over the past few years such as the Caofeidian International Eco-City, Tianjin Eco-City and Dontan Eco-city (Liu, 2012). Although the subject of logistics and efficient transport has been mentioned in the overall goals of these projects, the amount of documented literature on accomplishments and evaluations is thin to non-existent. Hence, they have been left out of this paper. Japan was an early pioneer of logistics optimization initiatives with the implementation of the first Urban Consolidation Center during the 1970's in Tenjin (Krzysztof, 2010). But as Van Duin (2010) notes, since logistics initiatives in Asia (particularly Japan) are tied to different hierarchal government powers and structures, they are not easily comparable to situations in European cities. Therefore, projects in Asia have not been explored in detail in this paper, other than the 2 mentioned in Appendix A.

4.2 EU Collaborative Initiatives

There are many collaborative efforts and initiatives within the EU to implement innovative projects and transfer best practices in the field of City Logistics. However, the number and structure of these collaborative efforts is complex. There is no singular over-riding effort where information is collected and reported. Many cities are implementing projects across different initiatives and they are not always coordinated.

Some of the initiatives are summarized below. The largest of these is CIVITAS which has implemented projects in over 60 cities.

BESTUFS, 2000-2007: Best Urban Freight Solutions. Provides handbooks and best practice guides for regulation. Includes case studies.

3 Classes of measures:

1.Goods vehicle access and loading in Urban areas

2. Issues involved in last mile solutions

3. Solutions associated with Urban Distribution Centers (Urban Consolidation Centers)

City Ports, 2005: Investigation of Tools and Policies for urban Goods Distribution. Includes examples of cities. 2 classifications:

1. What to regulate
2. How to regulate

START – (Short Term Actions To Reorganize Transport of Goods), 2006-2009: Coordinated by the City of Göteborg with projects in 5 cities: Bristol, Göteborg, Ravenna, Riga, and Ljubliana. Focus on strategies to do with: Restriction Zones, Consolidation Centers, and Incentives

CIVITAS, 2002-2012: The largest European wide Initiative co-financed by the European Union for encouraging sustainable transport via technology and policy based strategies. 60 different European cities have been funded for innovative projects. The initiative is currently in its 3rd phase.

SUGAR – (Sustainable Urban Goods Logistics Achieved by Regional and Local Policies): Collaboration of 10 EU Countries, including technical partners in Italy, Belgium and Poland. Their aim is to transfer best practice and policy experience in management of urban freight distribution.

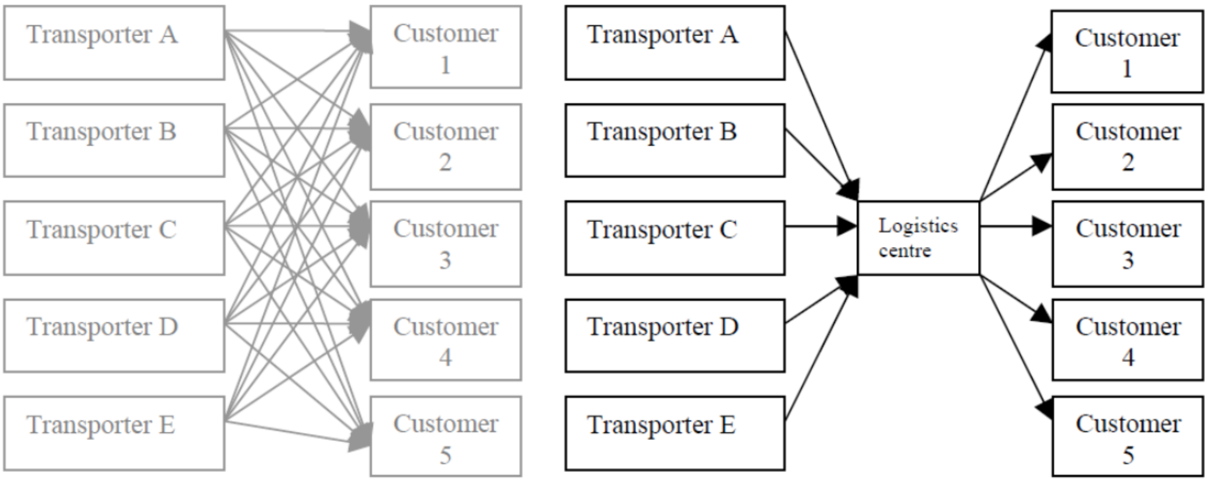
5. Classifying & Evaluating Logistics Improvement Projects

Munuzuri et. al (2005) outline the types of solutions that are available to local authorities with reference to specific examples. This classification is however limited to types of technical solutions. Benjelloun et. al (2010) have compiled a comprehensive classification of city logistics projects based on studying 70 projects. This provides a systematic overview and taxonomy of logistics initiatives. The result is presented in a group of 5 main categories: Description (objectives, status, evaluation tools, stakeholders, project initiators), Business Model (infrastructure financing, operation financing, management), Functionality (consolidation, mode of transport, regulation, intelligent transport systems, cooperation), Scope (geographical coverage, products, customers, services) and finally Technology (vehicles, information and communication). Each category is further refined by a number of criteria for each, with a set of items defining each criteria.

There are two peer reviewed papers that present methodologies for evaluating City Logistic Projects. Patier & Browne (2010) present a method developed in France based on examination of 15 projects, comparing a wide range of criteria. They present two case studies to demonstrate the use of their evaluation method. Furthermore, Munuzuri et al. (2010) developed a systematic model for estimating transport of goods in a city and a method for estimating the contribution of delivery of goods to the ecological footprint of a city.

6. Logistics Centers

The most common and effective initiative has been found to be the establishment of some sort of logistics center located on the perimeter of a city or district. This is also referred to as an Urban Consolidation Center (UCC), City Logistics Center, Coordination Center, or similar. The diagram below outlines the function of such a center.



(TRENDSETTER WP9, 2006)

The objective is to reduce the number of trips, and kilometers travelled by larger carriers to individual recipients by centralizing deliveries for "last mile" transports. Load factors of trucks are also increased, and cleaner, smaller vehicles can be used to make the final deliveries. This results in reduced congestion, noise, and emission of pollutants.

Most UCCs are implemented for old town city centers and downtown areas where there is congestion, restriction of space, and restrictive access zones. Experience for newly built districts is low, except for Hammarby Sjöstad (Sweden) and Potsdammer Platz (Germany) where these were setup to coordinate deliveries of construction aggregates. The case of Hammarby Sjöstad is presented in more detail below. The UCC established for the construction of the Postdammer Platz project in Berlin was very successful which led to the project being completed 6 months early (Goldman & Gorham, 2006). The success was due to the municipality requiring all concrete to be produced locally on-site and for aggregates to be transported via rail to the site.

6.1 Leverage Points

The clear advantage for establishing a UCC of goods for newly built neighborhoods is the reduced barrier of "locked in effects". Shops have not yet established contracts with their suppliers and therefore participation rates are much higher.

The highest leverage comes from allowing receiving parties to communicate and coordinate their deliveries. This does not necessarily need to come in a form of a logistics center. In Berlin for example, incentives were put in place by local authorities that encouraged adjacent shops to coordinate their deliveries to a single carrier. In return they received longer loading/unloading times (Geroliminis & Daganzo, 2004).

Another leverage point is working with independent stores that do not have their own distribution solutions. A great proportion of retail stores nowadays are part of chains and are already locked into receiving goods from their main supplier distribution center. These distribution centers are however optimized for the operation of the company as a whole and not necessarily for city logistics. They are also driven from the supply side rather than the geographical location of destination sites (Rooijen & Quak, 2010). Working with these chains and providing incentives / regulations that optimize their deliveries is important.

6.2 Challenges

The challenges that face the long-term viability of UCCs are: funding, low participation, lack of support policy measures (zoning and restrictions), lack of delivery volume, and unsuitable physical location (Rooijen & Quak, 2010). Many established UCCs are heavily dependent on public funds, have low customer base, and hence shut down after a few years operation (Quak, 2008). Brown et al (2005) reports that of the 200 centers opened in Germany, only 5 were still in operation after the initial demonstration phase. Nijmeng and Stockholm are exceptions. The Nijmeng center in Netherland has been very successful in getting a large customer base and is expected to grow without public funding. Other Dutch cities have also started UCCs based on the Nijmeng model.

7.

Case 1: Nijmeng, Netherlands - Logisticts Center: Binnenstadservice.nl

A Consolidation Center for delivery of goods was established in the Dutch city of Nijmegen in April 2008. The objective of this initiative was to reduce congestion, emission of local air pollutants, and noise. The center is located 1.5 kilometers from the medieval city center where streets are narrow and there is high risk of congestion (Rooijen & Quak, 2010).

The center distinguishes itself from other goods logistics centers because its focus is on receivers rather than on carriers. Most shops are independent retailers whose deliveries are not optimized compared to stores that are part of retail chains. The center opened with 28 customers. After 1 year this increased to 98 retailers. The center only handles non-perishable goods. Deliveries are made by clean transportation: electric bicycles and a natural gas truck (Rooijen & Quak, 2010).

The center provides a free basic service to retailers: receiving goods, and delivering them at a time that the retailer wants them. Store owners initiate the process by asking their suppliers to deliver to the center instead of to their stores. The center provides other extra services for charge:

- Storage
- Home-deliveries to end customers (ex. large goods: fridges and computers)

The benefit to the retailers who join is that their deliveries are bundled together from different suppliers and delivered when retailer demand it. This saves them time. The advantage to carriers is that they make fewer trips to the city center. They can deliver goods one time a week, and the center can then forward these to the retailers for the desired day (Rooijen, 2010).

The center relies on government subsidy to operate. However this funding will be removed after 1 year of service after which the center is expected to stay in business via earnings from extra services it offers (Rooijen & Quak, 2010).

7.1 Evaluation Methodology

Rooijen & Quak (2010) have conducted a detailed evaluation after 1 year operation on a single representative day. A base scenario (no center) was used for comparison. Before the center started, local authorities performed two large data collection studies: (i) deliveries per store for an average week and carriers responsible, (ii) truck movements on 1 representative day based on license plate counts.

Data after 1 year of operation was collected from the center for the stores that joined as well as the type of trucks that delivered to the center. Surveys were also conducted of truck drivers for collecting data on their origin, destination, and deliveries. The collected data was input to a software model used by the Dutch Environmental Agency with output of fleet-size, travel time, and travel distance. The impacts of noise as well as particulates and NOx were then simulated by the model.

Inconvenience for residents was measured via number of loading/unloading activities within 100 meter radius of their homes.

7.2 Results

Results are presented in terms of (i) logistical improvements: # of truck kilometers travelled and truck travel time, (ii) local air quality in terms of particulates, and NOx, and (iii) Noise levels.

The most revealing results are in logistical improvements: 5% decrease in total truck kilometers, and 7% decrease in total truck stops. It is important to mention that measurements (via the model) are made on the total number of traffic in and out of the city center. Hence the results above in terms of real numbers are substantial. It is estimated that by the 2nd and 3rd year of the centers operation, up to 32% improvement in total numbers can be reached, due to increased number of customers. Table below outlines these results (Sencerio 0= base, Senario 1= after 1 year).

	Scenario 0	Scenario 1
Number truck-kilometres in city centre	475	451
Total truck travel time (in hours)	12.9	12.2
Number of truck routes in city centre	217	208
Number of truck stops in city centre	486	453
Number of trucks in city centre	186	182
Kilometres by van / passenger car (<3.5 tons)	180	141
Kilometres by light truck (3.5-7 t.)	89	79
Kilometres by truck (7-18 t.)	190	179
Kilometres by heavy truck (>18 t.)	15	14
Kilometres by BSS CNG light truck	0	37

(Rooijen & Quak, 2010)

Local air quality was modeled in ug/m3 of PM_{10} and NO_2. Since the total vehicle traffic in the city did not change substantially due to the logistics center (large number of personal vehicles), the results show hardly any improvements. Noise levels were also measured at different spots around the city, which showed marginal improvements. Larger improvements are expected however when the center gains more customers.

8.
Case 2: Stockholm, Sweden

The measures implemented in Stockholm include 2 Logistics Centers in Hammarby Sjöstad: (i) For aggregates during construction phase and (ii) For goods to residents, local businesses, schools, and private companies. Another Logistics Center was established for coordinated delivery of goods to restaurants and businesses operating in the Old Town district. A detailed evaluation study was conducted by Trendsetter (Trendsetter, 2005). Trendsetter is a subsidiary of the larger EU CIVITAS initiative.

The logistics center for goods included web-based services such as dry-cleaning and participation of local farmers. The center was established in 2002. A study was conducted in 2003 by City of Stockholm (Stockholm, 2003) showing disappointing results due to low participation by residents and businesses. The report details the plan and recommendations for future initiatives. The center is still on-going but a more recent evaluation study has not been conducted. Lessons learned and recommendations from this study can be of great value for implementing measures for Royal Seaport project.

8.1 Logistics Center for Construction Aggregates in Hammarby Sjöstad

This initiative will be presented in more detail below due to its success and direct applicability to the Royal Seaport Project. An evaluation study was conducted by Trendsetter (Trendsetter WP9, 2006). The objectives of the project were to: decrease # of small deliveries, reduce congestion, reduce energy use and emissions of CO_2, NOx, and particles, and improved living and working conditions.

The center was initially 95 % publicly funded and operated by charging receivers (contractors) for a nominal fee. This fee was then increased as contractors recognized the value and money saved. Public funds were then reduced substantially (40 % and then 0 %) as the center was able to break even.

The center was located at the entrance to the construction site and received small deliveries of less than 4 pellets. Deliveries were then consolidated and delivered by smaller vehicles to the specific site. A web-based computer system was used to coordinate deliveries. Contractors using the same road were part of an online community were they had access to information on other contractor deliveries (even larger deliveries not going through the center) and could schedule and share deliveries. A traffic coordinator was also involved to send SMS messages during congestion periods.

The center also provided temporary storage. It operated for 3 years. It is now dismantled and moved to a nearby building.

8.2 Evaluation Methodology

The following indicators were evaluated: Energy use, CO_2/NOx /particle emissions, number of trips, kilometers travelled, number of small trips, vehicle load factor, queue times, and noise emissions. Data was collected via the Center's computer systems where # of goods and sender/receiver information is stored. Counts were made on-site as well as interviews with contractors, drivers, and suppliers. Case studies were also complied as part of a master's thesis (Ekerlund, 2003).
Data collection is a fundamental challenge for evaluation studies. It is important to establish structures for accurate data collection as early in the project as possible and offer incentives for stakeholders to monitor/report their activities.

8.3 Results

The results related to the indicators are presented by TRENDSETTER below. During its peak operation, 100 vehicles delivered to the center and 13 consolidated trips were made to the specific sites. This was given a consolidation factor of 8 (100/13). It is important to note that the "after" data is based on a consolidation factor of 6, and the "before" case is based on a consolidation factor of 2. During its peak, there was a reduction of 20 trips/day. The number of vehicles kilometers were reduced by 26 kilometers per day. Emissions data were calculated based on lorry type and kilometers travelled.

Living and Working environment were evaluated by examining the number of times a standard noise level (55 dB according to Swedish National Road Administration) were exceeded per day. A simulation software by the Stockholm Environment and Health Administration was used for calculations based on noise of passing lorries and number of times lorries drove by a certain spot. During peak operation, the number of times noise levels were exceeded was reduced by 100.

Indicator	Unit	9.1	
Context		The construction site in Hammarby Sjöstad, Stockholm	
		Before	*After*
Energy use	*Joule/ year*	1600 G	170 G
Emission of fossil CO_2	*Tonnes /year*	119	12.5
Emissions of NOx	*Tonnes /year*	0.729	0.077
Emissions of PM	*kg/year*	12.3	1.3
Noise levels	*dB(A)*	55 Db(A) exceeded 360 times/day	55 Db(A) exceeded 260 times/day
No of trips (Total number of goods vehicles moving in demo areas)	*No or Qualit-ative 5 degree scale*	Index 2	Index 4
Living conditions	*Noise hours*	55 Db(A) exceeded 360 times/day	55 Db(A) exceeded 260 times/day
Working environment	*Noise hours*	55 Db(A) exceeded 360 times/day	55 Db(A) exceeded 260 times/day
Vehicle km (Vkm) by vehicle type (peak/off peak or total)	*Vkm per day*	64	26
Vehicle load factor	*%*	~50	85
Queuing time/stop time	*Min./ Trip*	~60	6
Small deliveries	*Vehicles/ day*	219	169
Vehicle fleet	*Vehicles*		
Total distance	*Km/trip*		

(Trendsetter WP9, 2006)

The response from the contractors involved has been very positive. Since the center was dismantled, contractors have commented on its benefits for their scheduling. The rate of ending projects on time and within budget was commented to be much higher and this could be a driver introducing this scheme in the future. There have also been hidden benefits such as reduction in damaged or stolen goods.

9 Discussion

The greatest level of influence for implementation of urban logistics improvement initiatives comes from providing a means for various stakeholders (retailers and carriers) to cooperate and consolidate their shipment efforts. This can be best achieved through the setup of a Logistics Center combined with web-based information systems to share and communicate deliveries. Regulations and restrictive zoning by-laws can also support these measures. There are mutual gains for all stakeholders, but “locked-in” effects in already established infrastructures makes participation and penetration a challenge for Logistics Centers. However, setting up such schemes in new neighborhoods such as the Stockholm Royal Seaport can reduce these challenges. For evaluation, it is very important to have a clear evaluation plan before any initiatives are established. Many projects evaluated had difficulty in gathering good data. Therefore, it is important that the data collection infrastructure be setup as early as possible in the project with means of motivating stakeholders to record and monitor their activities.

10 Conclusion

The greatest inefficiency in the transport of goods and materials is during the “last mile” within cities and urban areas. Logistics Centers allow for a single point of contact for suppliers and receivers which reduces the number of trips made by vehicles and increases their load factors. Historically, logistics centers were established for cities with old historical urban areas where narrow roads have forced cities to reduce congestion. An example of a successful initiative was presented for the city of Niijmeng. Logistics centers for new urban areas are not yet widely implemented except for Stockholm and Potsdammer Platz in Berlin. The case of Hammarby Sjöstad has been very successful and it was presented more in depth in this report. Evaluation reports of other better documented initiatives are presented in the Appendix (particularly those marked with *) and should form a basis for any further research in this area.

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Appendix A

Survey of largest International Projects

Project	Urban or Citywide?	What type of Transport?	Type	Method	Source
Houston, USA	Citywide	Goods	Immaterial Infrastructure: Information System	Real-Time Traffic info gathered from counters on streets. Info made available via web to carrier companies to help coordinate transport.	(Munuzuri et. al, 2005)
Freiburg, Germany	Citywide (Pilot)	Goods	Material Infrastructure: Carrier Cooperation	Cooperation scheme amongst carriers, where one carrier makes a collection round of all the goods to be transported by different carriers, and then delivers them at their final destinations.	(Thoma, 1994) (Munuzuri et. al, 2005)
Kassel, Germany	Citywide (Pilot)	Goods	Material Infrastructure: Carrier Cooperation	Cooperation scheme amongst carriers, where one carrier makes a collection round of all the goods to be transported by different carriers, and then delivers them at their final destinations.	(Strauss, 1995) (Munuzuri et. al, 2005)
Genoa & Rome, Italy	Citywide	Goods	Immaterial Infrastructure: Identification Systems	Enforce access controls to freight vehicles to certain parts of the city. Use of Optimal Character Recognition for reading licensee plates using cameras and software. Very efficient way of controlling entry to restricted urban areas.	(PROGRESS, 2002) (Munuzuri et. al, 2005)
Copenhagen,	Old Town	Goods	Immaterial Infrastructure:	Certification Scheme for access to old town.	(Geroliminis, 2005)

Denmark			Restriction Zone Certification	Vans and Lorries over 2.5tonnes, must have certificates to stop in the center. Need to meet criteria for capacity and age of engine to obtain and renew certificates.	
Rotterdam, Netherlands	Downtown	Goods	Material Infrastructure: Urban Distribution Center, Green Vehicles	Electric Vehicle City Distribution System. Combination of Use of electric and hybrid vehicles for transport to inner city through a Urban Distribution Center located just outside the city. Regular lorries were used for long distance transport to and from the distribution center.	(Geroliminis, 2005)
Osaka, Japan	Downtown	Goods	Green Vehicles Immaterial Infrastructure: Cooperation	Electric Vans are provided at various parking spaces, and delivery companies can loan the vehicles, use them to deliver their goods and return them again. Vehicles equipped with GPS and Information Communication Systems	(N. Geroliminis, 2005. ”A review of Green Logistics…”)
Berlin, Germany	Hotspot Streets	Goods	Governance Private-Public Cooperation	Government facilitate cooperation of interest groups: shopkeepers, police, local authorities. This led to cooperation amongst various recipients (adjacent shops supplied by same carrier) and a combination of deliveries to a single recipient. Joint decision on location of loading zones.	(Geroliminis, 2005)
Berlin, Germany	Potsdammer Platz	Construction Goods	Governance Material Infrastructure: Consolidation Center	Municipal authorities required concrete be produced on-site, and majority of materials be transported in-out by rail. A logistics company was appointed to coordinate freight transport services.	(Goldman and Gorham, 2006)
*Stockholm	Hammarby Sjöstad	Construction Goods	Material Infrastructure: Logistics Center	1 . Logistics Center for transport of building Materials. 100 vehicles reduced to 16.	(Trendsetter, 2003). Evaluation: Trendsetter 2005

				2. Logistics Center for transport of Goods. A web-based service for households, local businesses and local farmers. Participants pay fees for the delivery service. Local deliveries made by electric vehicles.	(Goldman and Gorham, 2006) (Geroliminis, 2005)
*Stockholm, Sweden	Old Town	Goods	Material Infrastructure: Logistics Center	Logistics Center for delivery of goods to restaurants and shops. Deliveries made by clean vehicles. Customers were shops/restaurants.	(Trendsetter, 2004). Evaluation: Trendsetter 2005
Barcelona, Spain	City Wide	Goods	Immaterial Infrastructure: Online Load/Unload Reservation	Web-based load/unload reservation system for freight deliveries. Carriers fillout a form with time and place of requested operation, website presents available parking spaces. Carries can then reserve the time and spot. Surveillance system controls the parking spot. Carriers can now find parking spots more quickly.	www.bcn.es/infotransit (Geroliminis, 2005)
Barcelona, Spain	Downtown (Trial)	Goods	Immaterial Infrastructure: Night Delivery Scheme	40 tonne lorries are equipped with anti-noise systems and make two trips at night. 11pm for non-perishable products, and 5am for perishable. Saved trips during peak hours.	(Geroliminis, 2005)
*Graz, Austria	Shopping Mall (Demo Projec)	Goods	Material Infrastructure: Coordination Warehouse	Consolidation b/w shops at the shopping center and a carrier company with warehouse in city outskirts. Trips to mall were made with green vehicles.	(Trendsetter, 2006) Evaluation: Trendsetter 2006
Tokyo, Japan	Downtown	Goods	Material Infrastructure: Information System and Logistics Center	"transport requests by shippers were made online and a responsible logistics service provider was collecting the bundled demand for each building, thus decreasing roadside parking vehicle kilometers traveled by trucks resulting less congestion and environmental impacts". .	(Geroliminis, 2005)

Nuremberg, Germany	Citywide	Goods	Governance	Subsidized private cooperation among shippers and retailers to coordinate deliveries (or giving them extra privileges, like longer shipping times).	(Goldman & Graham, 2006)
*Poland (Various Small-Medium Cities):	City Wide	Goods	Material Infrastructure: Urban Consolidation Centers	Urban Consolidation Centers for coordination of goods to specific areas of the city.	(Krzysztof, 2010)
*Nijmegen, Netherlands	Citywide	Goods	Urban Consolidation Center	Focusing on receivers rather than carriers	(Rooijen & Quak, 2010) and (Van Duin, Quak, Munuzuri, 2010)
*Bristol (Also Göteborg, Ljublijana, Ravenna)	Citywide	Goods	Immaterial Infrastructure: Restriction Zones, Incentives Material Infrastructure: Consolidation Centers	Various measures were taken as part of the START (Short Term Action to Reorganize Transport of Goods) initiative	(START, 2009)
*Lucca, Italy	Old Town	Goods	Material Infrastructure: Uran Distribution Center Immaterial Infrastructure: Information System	Both measures were taken for the old town of Lucca (population: 80,000)	(Trailblazer, 2010)
*Norwich, UK	City Center	Goods	Material Infrastructure: Urban Consolidation Center Immaterial Infrastructure: Traffic info to freight operators	Providing Web based info on traffic situations in exchange for implementing energy efficient methods of transport	(CIVITAS 10.3, 2009) (CIVITAS 12.8, 2009)
*Malmö, Sweden	City Center	Goods	Immaterial Infrastructure: Satellite based traffic management system for Small-Medium Enterprises (SMEs)	Improve coordination of dispatch operators to trucks: GPS systems installed on fleets together with handhelds communication devices	(CIVITAS-Malmö 10-2, 2009)

*Malmö, Sweden	City Center	Goods (Perishable Foods)	Immaterial Infrastructure: IT Based Logistics Tool	Grocers & restaurants see availability of different fresh products planned throughout the season and producers in the region identify market demand for products. The co-ordinated orders from purchasers are fed to the logistics to maximize on-time delivery and vehicle capacity and minimize mileage.	(CIVITAS-Malmö 10-7, 2009)
*London, UK	City Center	Construction Goods	Logistics Center	A logistics center for all new construction site in the city of London	(Transport for London, 2008)
*Parma, Greece	City Center	Goods	Logistics Center	Logisitics Center for Old Town	(SUGAR, 2009)