SULPITER PROJECT
BENCHMARK ANALYSIS

November 29th 2016

Version 1

29 11 2016

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A. Scope of Work

This work was developed by the Institute for Transport and Logistics (ITL), within the SULPiTER project (code CE222), funded by the Interreg Central Europe Programme 2014 – 2020 (European Regional Development Fund).

SULPiTER is coordinated by ITL and it kicked-off in June 2016. Its core technical focuses is on the development of Sustainable Urban Logistics Plans (SULP) in the participating Functional Urban Areas (FUA), which are Bologna, Budapest, Poznan, Brescia, Stuttgart, Maribor and Rijeka.

This report includes the analysis of:

- cases of logistics planning in Europe and in particular of SULPs and of their mainstreaming into Sustainable Urban Mobility Plans (SUMPs);
- low carbon urban mobility measures[1] in Europe, plus measures outside Europe.

The analysis wants to inform and support project partners in developing their Sustainable Urban Logistics Plans. In particular:

- it analyses city cases to understand how logistics plans were developed, including their governance, process and main contents;
- it is a technical report suitable to train the project authorities on urban logistics experiences;
- it describes low carbon logistics measures, which are examples usable by the project cities to build their SULPs and by the project associated cities[2] to learn about urban freight transport measures.

This report is structured in the following Sections:

- **Section 2** describes the **methodology and approach**.
- **Section 3** analyses **mobility and logistics planning in Europe** and it describes the planning documents of a panel of European cities.
- **Section 4** analyses **low carbon logistics measures** in Europe, plus selected US cases.
- **Section 5** focuses on the topic of **Key Performance Indicators** in logistics planning.
- **Section 6** includes the **conclusions**.

This analysis is complemented by a parallel work developed by ITL, which concerns a DELPHI analysis on trends and scenarios in FUAs in Central Europe (Deliverable D.T1.1.3). The latter work is delivered in a separate report. In fact, despite the benchmark and the DELPHI analyses share the goal of supporting the project FUAs in developing SULPs, they present different methodological approaches and they are two separate strands of activities in the SULPiTER project.

[1] We define low carbon logistics measures as measures aimed at reducing the environmental and carbon footprint of logistics activities in urban and metropolitan areas. They are meant as synonymous of city logistics measures in the following parts of the document.

[2] The further cities associated to the project are: Padua, Venice, Treviso, Trieste (Associated Partners). These cities are not developing SULPs in the project, but they are involved in the project training activities.

B. Methodology and approach

1. Introduction

Firstly, SULPiTER has a focus on Functional Urban Areas (FUAs), as defined by OECD[3] and by the Central Europe Programme[4]. FUAs can typically be defined as metropolitan areas.

SULPiTER moves the focus of city logistics projects, which usually concern the actions and plans targeted to the inner city centre, to a wider territorial scale, which considers cities as more complex transport and logistics systems including different industrial, logistics, retail and residential areas.

Consequently this analysis and benchmark of logistics plans mainly focusses on territorial contexts which are FUAs and which are comparable to the SULPiTER cities in terms of urban complexity.

The same principle applies to the analysis of logistics measures. In particular we analyse both logistics measures which can find applicability at the inner city scale and measures applicable in the wider Functional Urban Area. This has the aim of delivering technical inputs which can be used by the project authorities in preparing their Sustainable Urban Logistics Plans.

Secondly, SULPiTER does not only focus on the technical contents of Sustainable Urban Logistics Plans and on the urban logistics measures within the plans, but it also targets the process and governance to develop the plans. In particular a specific work package of SULPiTER focuses on the building the governance of logistics plans.

Therefore these issues were analysed in the report to support partners in the development process of SULPs.

The governance and process of mobility plans are key elements of the Sustainable Urban Mobility Plan concept. This concept gives guidance to the analyses developed, as well as to the SULPiTER project.

2. The SUMP concept

The Sustainable Urban Mobility Plan (SUMP) concept refers to an innovative planning approach introduced by the European Commission, which structures the steps of mobility planning in urban contexts and guides authorities towards a more comprehensive and sustainable approach in developing their mobility plans. According to the European Commission a "*Sustainable Urban Mobility Plan is a strategic plan designed to satisfy the mobility needs of people and businesses in cities and their surroundings for a better quality of life. It builds on existing planning practices and takes due consideration of integration, participation, and evaluation principles*"[5].

The ELTIS guidelines developed by the European Commission describe in detail the SUMP concept and its development phases[6].

Urban logistics is included in the topics[7] addressed in the SUMP concept and the core characteristics of a SUMP, which find applicability to logistics planning, concern:

[3] https://www.oecd.org/gov/regional-policy/Definition-of-Functional-Urban-Areas-for-the-OECD-metropolitan-database.pdf

[4] http://www.interreg-central.eu

[5] European Commission, Guidelines - Developing and implementing a Sustainable Urban Mobility Plan, 2014

[6] http://www.eltis.org/sites/eltis/files/guidelines-developing-and-implementing-a-sump_final_web_jan2014b.pdf

- Long-term vision and clear implementation plan;
- Participatory approach;
- Balanced and integrated development of all transport modes;
- Horizontal and vertical integration;
- Assessment of current and future performance;
- Regular monitoring, review and reporting;
- Consideration of external costs for all transport modes.

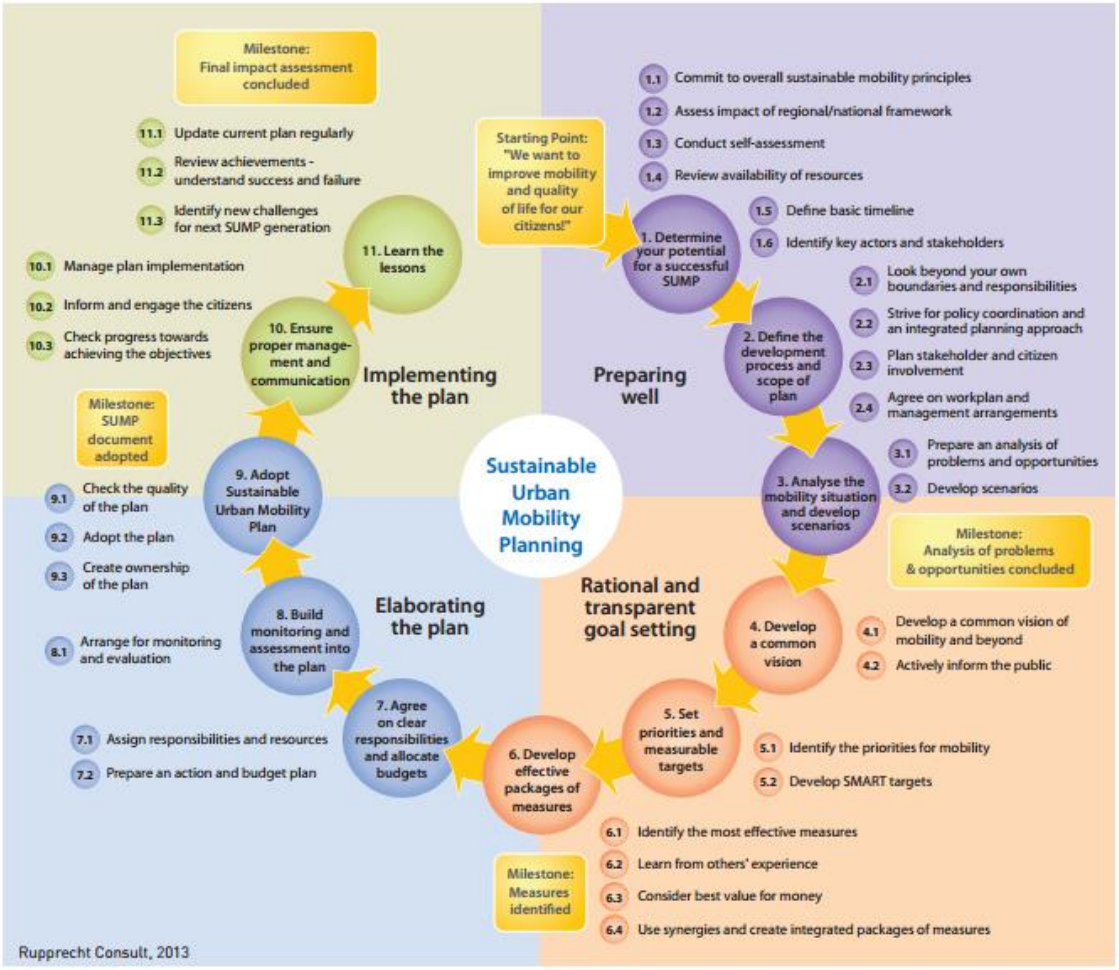
In particular, from a governance point of view the SUMP concept focuses on:

- A participatory approach in the SUMP development and implementation. This is necessary to allow stakeholders and citizens to take ownership of the Sustainable Urban Mobility Plan and of the policies it promotes.
- A cooperation approach between departments of the authority developing the SUMP (in an inter-disciplinary approach); an horizontal cooperation with between authorities of neighbouring urban and peri-urban areas (basically of authorities in the FUA that the SUMP addresses); a vertical cooperation with other lower and high level authorities (e.g. districts, agglomerations, regions).

From a process point of view the SUMP concept includes 11 main steps, grouped into 4 key phases, which concern the preparation, goal setting, elaboration and implementation of the plan, as reported in the following figure.

[7] The topics included in a SUMP are: public transport, non-motorised transport (walking and cycling), intermodality and door-to-door mobility, urban road safety, flowing and stationary road transport, urban logistics, mobility management, and Intelligent Transport Systems (ITS).

Figure 1: Planning cycle for a Sustainable Urban Mobility Plan



Source: European Commission, Guidelines - Developing and implementing a Sustainable Urban Mobility Plan, 2014

The importance of the SUMP concept to this work stems from the SULPiTER's approach to logistics planning, which wants to:

- reflect the methodological steps of the SUMP development to deliver logistics planning, and in particular to develop SULPs;
- mainstream and embed logistics planning into SUMPs, as means to ensure a comprehensive approach to urban transport issues and to ensure that urban logistics find adequate inclusion within urban mobility policies.

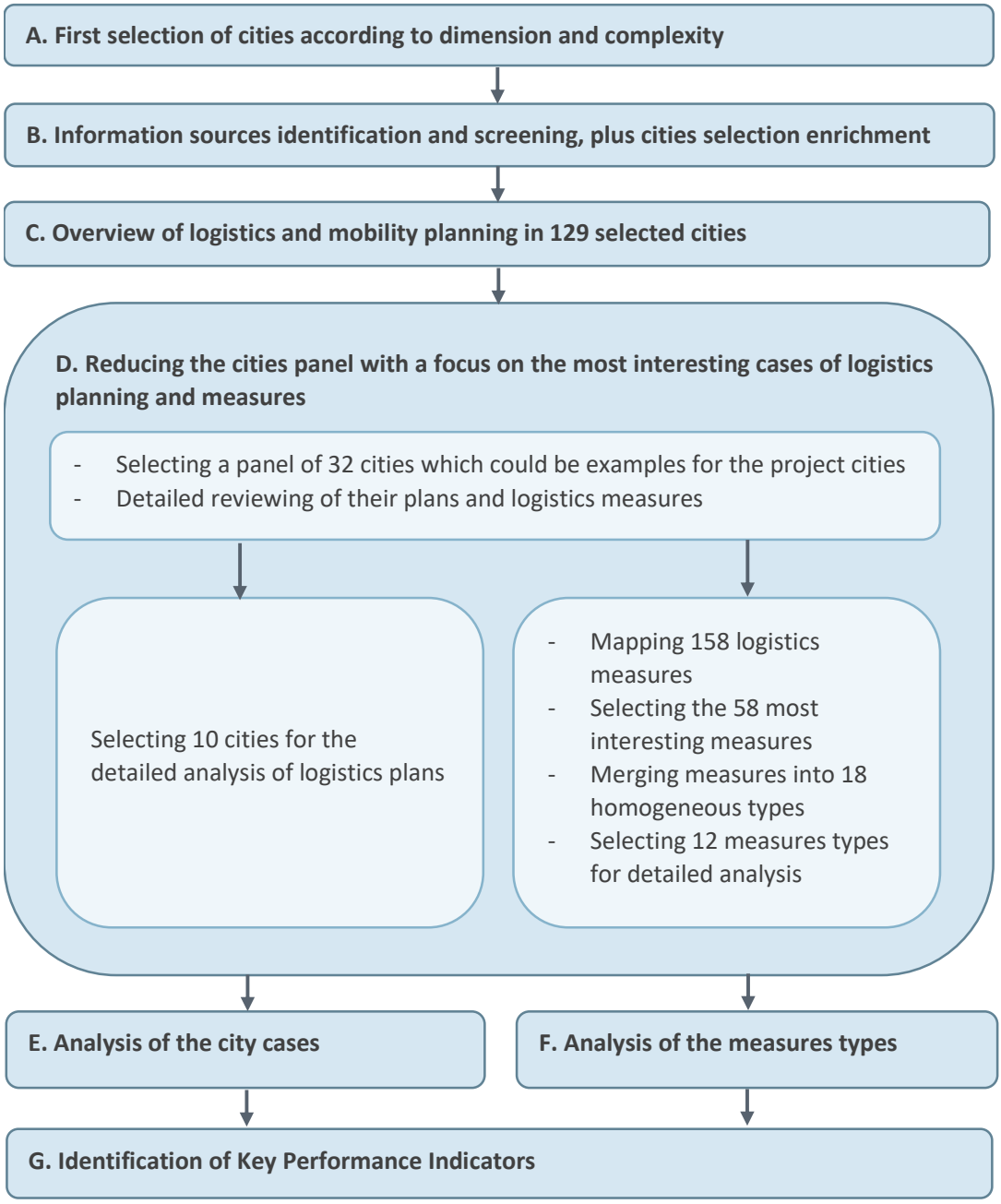
Therefore, based on the SUMP concept and process, we have analysed:

- to what extent the SUMP concept finds application in logistic planning;
- to what extent logistics is included in SUMPs.

3. The methodological steps

The phases of the analysis are reported in the following figure and subsequently described.

Figure 2: Methodological process



Source: Steer Davies Gleave's elaboration

A. FIRST SELECTION OF CITIES ACCORDING TO DIMENSION AND COMPLEXITY

The starting point to select cities was the dimension of the SULPiTER cities. The following figure reports the population of the SULPiTER cities and an assessment of their characteristics in terms of FUA complexity level and main orographic traits.

Table 1: The SULPiTER cities' dimensions and characteristics

City / FUA	Approximate inhabitants	FUA complexity level	Orography
Budapest	1,700,000	High	Continental / river FUA
Bologna	1,000,000	Medium - High	Continental FUA
Poznan	600,000	Medium - High	Continental FUA
Stuttgart	600,000	Medium - High	Continental / river FUA
Brescia	335,000	Medium - Low	Continental FUA
Maribor	230,000	Medium - Low	Continental FUA
Rijeka	210,000	Medium - Low	Maritime FUA

Source: Steer Davies Gleave elaboration on information reported in the SULPiTER project

Given the dimensional heterogeneity of the project cities, the first and more comprehensive approach to select the cities to analyse was the identification of the main urban contexts in Europe. This ensured to include cities which are comparable to the SULPiTER ones in terms of inhabitants and related FUA complexity.

At the same time this selection of cities allowed to include:

- FUAs which are continental ones, meant as cities not located on coastal areas.
- FUAs with rivers where inland navigation is possible.
- FUAs which are on coastal areas (maritime cities).

B. INFORMATION SOURCES IDENTIFICATION AND SCREENING, PLUS CITIES SELECTION ENRICHMENT

In order to map and analyse logistics planning and low carbon mobility measures, we selected two types of sources:

- the institutional web sites of the selected cities, as primary source of information concerning their logistics planning activities;
- thematic web sites and documents concerning SUMPs, urban logistics and SULPs, among which[8]: ELTIS, 2MOVE2, ADVANCE, BUMP, CH4LLENGE, CIVINET, CIVITAS forum, Do The Right Mix, DYN@MO, EcoMobility Shift, ENDURANCE, PUMAS, Solutions, TIDE.

The main challenge of this phase was that information sources were strongly fragmented and this required an extensive work to search and screen sources.

The screening of the information sources also allowed identifying further city cases which presented interesting initiatives concerning the development of SULPs. In particular we included urban contexts involved in the ENLCOSE project[9], which are smaller than the SULPiTER ones, but which developed SULPs.

A total of 129 cities were identified.

[8] The list of sources is reported in the Bibliography of this report.

[9] http://www.enclose.eu

C. OVERVIEW OF LOGISTICS AND MOBILITY PLANNING IN THE SELECTED CITIES

Based on the information sources identified, we mapped and preliminary reviewed the main mobility planning documents available for each of the 129 cities.

The main challenge was the diversity of mobility planning documents and the fact that logistics planning and measures can be found in different documents.

Therefore we created a categorization of cases which could allow the benchmarking of the city planning cases considering:

- The presence of a SUMP or of mobility planning documents.
- The inclusion of logistics measures, meant as specific logistics actions, in mobility planning.
- The presence of logistics planning, meant as comprehensive process of planning logistics and related measures at urban level.

This resulted in 5 categories of cities:

1 SUMPs without city logistics measures;

2 Mobility Plan with city logistics measures;

3 SUMP with city logistics measures;

4 Logistics plans;

5 SULPs.

The 129 cities were qualitatively benchmarked according to the above mentioned categories.

The 5 categories were not meant at an assessment of the quality of the plans, but at understanding to what extent logistics measures were included in mobility planning and to what extent cities developed logistics plans.

It is also important to mention that the evaluation of the extent to which each plan is or not a SUMP is quite complex, considering that:

- the SUMP concept is relatively new;
- some plans are similar to SUMPs in their nature and development process;
- each Member State has different types of planning tools which concern mobility.

We have included in the SUMP category those plans which:

- are labelled as such, by analysing the available city documents or by collecting other sources of information[10] indicating that the SUMP was developed.
- are defined as equivalent of SUMPs, as the Plans de Déplacements Urbains in France[11].

[10] All the sources were collected in August 2016. More recent development of mobility and logistics plans may not be mapped.

[11] http://www.epomm.eu/endurance/index.php?id=2809&country=fr

Finally we have excluded cases of mobility plans which are not SUMPs and which do not include urban logistics measures, because it appeared out of the scope of this work and of the SULPiTER project (urban logistics and SUMPs are our focus).

Therefore the categorization that we proposed was in our opinion suitable to be sufficiently comprehensive and include a wide number of types of mobility and logistics planning experiences.

D. REDUCING THE CITIES PANEL WITH A FOCUS ON MOST INTERESTING CASES OF LOGISTICS PLANNING AND MEASURES

In this phase we restricted the cities panel to 32 cities which could be interesting cases in terms experience in logistics planning and in logistics measures.

The main challenge was to give answer to two questions which are not necessarily related: which are the experiences in logistics planning and in particular in SULPs? Which logistics measures may find applicability in the SULPiTER cities?

In order to give answer to the first question concerning experiences in urban logistics planning, we have selected 10 cities, on which we subsequently developed a detailed analysis. The following table reports the cities and the reasons of the choice. In particular we focussed on cities which:

- were comparable to the SULPiTER ones;
- presented experiences of comprehensive logistics planning (logistics plans or SULPs);
- or included the topic logistics in mobility planning (mobility plan or SUMP) with a structured approach.

Table 2: The selection of 10 cities for the detailed analysis of logistics planning

CITY	Dimension	Case of SULP or logistics plan	Case of SUMP or mobility plan with city logistics measures
Vienna	Comparable to Budapest	-	SUMP with city logistics measures (cat. 3)
Brussels	Comparable to Budapest	Logistics plan (cat. 4)	Mobility Plan with city logistics measures (cat. 2)
Zagreb	Comparable to Bologna, Stuttgart and Poznan	-	Mobility Plan with city logistics measures (cat. 2)
Toulouse	Comparable to Bologna, Stuttgart and Poznan	-	SUMP with city logistics measures (cat. 3)
Paris	Comparable to Budapest	-	SUMP with city logistics measures (cat. 3)
Turin	Comparable to Bologna, Stuttgart and Poznan	-	SUMP with city logistics measures (cat. 3)
Utrecht	Comparable to Brescia, Maribor and Rijeka	Logistics plan (cat. 4)	SUMP with city logistics measures (cat. 3)
Almada	Comparable to Rijeka	SULP (cat. 5)	-

CITY	Dimension	Case of SULP or logistics plan	Case of SUMP or mobility plan with city logistics measures
Burgos	Comparable to Rijeka	SULP (cat. 5)	-
Stockholm	Comparable to Budapest	Logistics plan (cat. 4)	Mobility Plan with city logistics measures (cat. 2)

Source: Steer Davies Gleave's elaboration

In order to give answer to the second question concerning logistics measures which are potentially of interest of the SULPiTER partners, we developed the following activities:

- We made an extensive mapping of the logistics measures in the 32 cities. This resulted in 158 logistics measures[12].
- These measures were screened in detail to identify 58 measures which in our opinion could be of interest of the project partners. The availability of public information to describe the measures was also a criterion of selection.
- The 58 measures were grouped into 18 homogeneous typologies. The reason to group the measures was that each of the 58 measures was applied in a specific city context and its application relied on specific local conditions. Therefore, it was in our opinion more interesting to focus on types of measures and report examples of application, rather than the specific application of measures in single city cases. This enriches the analysis by bringing more cases of application per type of measure and supports a potential transfer process of measures independently of the local conditions.
- Moreover, the European examples of application of the types of measures were complemented with US cases.
- Finally 12 measures typologies were selected.

The following table reports the types of measures selected and the reasons for selection. One driver in the selection of the types of measures was the need to include types of measures could be applied not only in the city centre but also at wider City / FUA level, consistently with the SULPiTER focus on FUAs.

Table 3: Types of measures selected and reason for selection

Type of measure	Reason for selection	Main territorial focus in a FUA
Off street loading bays	The development of regulations to ensure logistics spaces and facilities in real estate development can be a logistics planning leverage which is fully in the institutional competences of authorities. It can also be a business initiative to ease logistics management.	City centre, Specific city area in the FUA and City / FUA
Cargo bikes	This measure type is growing in Europe and an easy and immediate leverage to face urban freight problems related to congestion and sustainability.	City centre and Specific city areas in the FUA

[12] The list of the 158 measures including the reference to the documents where measures are described is reported as an Appendix to this report. This guides partners through an extensive literature review which can be used to build their SULPs.

Type of measure	Reason for selection	Main territorial focus in a FUA
Clean fuels and vehicles mobility schemes	The topic of clean fuels is strongly discussed EU level, also following the EC Alternative Fuels Infrastructures Directive 94/2014. According to the Directive Member States have to develop National Policy Frameworks within November 2016 and this will impact on urban transport policy making.	City centre and City / FUA
Spatial planning for logistics	This type of measure is strictly relevant to the SULPiTER purpose of developing logistics planning by including spatial planning issues.	City / FUA
Freight routes	This type of measure can be part of authorities' traffic regulatory actions in order to limit traffic conflicts between passengers and freight mobility. It is in their statutory powers.	City / FUA
Truck tolling	The issue of tolling is part of authorities' statutory powers and the internalization of external transport costs is among the EC priorities. Partners may evaluate the applicability of national tolling / charging schemes (e.g. Switzerland) at an urban level.	City / FUA
Delivery and Servicing Plans	This type of measure has a focus on generators of freight traffics and it was successfully implemented in different EU cities.	City centre, Specific city area in the FUA and City / FUA
Mobile depots	This type of measure represents a flexible warehouse solution, easily implementable to serve specific city areas.	City centre and Specific city areas in the FUA
Off-peak deliveries	It proved to deliver results in different cities and it is interesting because it foresees an active involvement of shippers.	City centre and Specific city areas in the FUA
By boat logistics	This can be an example applicable to different supply chain in river cities participating to the SULPiTER projects.	City centre and Specific city areas in the FUA
Urban Distribution Centres	The topic of cargo consolidation remains a priority in EU cities and it deserves discussions within SULPiTER.	City centre and Specific city areas in the FUA
Coordination of urban freight rules in the city	This type of measure specifically addresses the issue of coordination of logistics rules at FUA level and it brings the issue of horizontal governance coordination of districts / boroughs.	City / FUA

Source: Steer Davies Gleave's elaboration

E. ANALYSIS OF THE CITY CASES

For each of the 10 selected city cases, we carried out a detailed analysis including:

- A short description of the city context / dimension;
- An abstract of the logistics plan;

- The planning document positioning versus the SULP concept;
- The plan governance and process including eventual relations to the SUMP concept;
- An overview of the main logistics measures which are part of the plan.

F. ANALYSIS OF THE LOGISTICS MEASURES TYPES

For each of the 12 selected measures types, we carried out a detailed analysis including:

- Short description of the measure.
- Category of the measure type, considering that each measure type may relate to one or more of the following categories:
  - regulation;
  - technology;
  - infrastructures;
  - services;
  - industrial / economic;
  - urban planning;
  - energy.
- Scale of application and impact: City centre, Specific city areas in the FUA, overall City / FUA.
- Problems and obstacles in the development of the measure type.
- Investment and operational costs.
- Benefits.
- Examples of application.

Finally, the measure types were qualitatively benchmarked with reference to:

- The category of measures type.
- The territorial level of applicability: City centre, Specific city areas in the FUA, overall City / FUA.
- The investment and operational costs.

G. IDENTIFICATION OF KEY PERFORMANCE INDICATORS

The analysis of the logistics plans and measures informed the identification of typical Key Performance Indicators in urban freight transport. This answers the need expressed by partners of receiving suggestions concerning the elements to be monitored in the plans implementation.

C. Mobility and logistics planning in Europe

1. Introduction

This section presents the results of the mapping of mobility and logistics planning experiences in 129 city cases. The cities' planning experiences are benchmarked towards the following categories.

1 SUMPs without city logistics measures;

2 Mobility Plan with city logistics measures;

3 SUMP with city logistics measures;

4 Logistics plans;

5 SULPs.

The goal is the understanding of the extent to which:

- European cities developed SUMPs;
- City logistics measures are included in mobility planning;
- Cities developed logistics plans, including cases of SULPs.

Moreover the Section enters into the detail of 10 city cases and it describes their mobility and logistics planning.

2. Analysis of mobility and logistics planning in European cities: from SUMPs to SULPs

The panel of cities is presented in the following map.

Figure 3: The panel of cities

Source: Steer Davies Gleave's elaboration

The analysis shows an extremely heterogeneous situation concerning logistics and mobility planning in Europe.

22.5% of the analysed cities do not fall in any of the categories identified, as shown in the following table.

Table 4: Cities in and out of the identified categories

Cities groups	Frequency
Cities which are not in any of the selected 5 categories	29
Cities which are in at least one of the selected 5 categories	100
TOTAL	**129**

Source: Steer Davies Gleave's elaboration

This does not mean that the 29 cities not included in the identified categories have not faced mobility issues or developed mobility planning. In fact they may have developed traffic plans, or mobility plans without specific logistics measures; nevertheless the analysis of the latter cases is out of the scope of this work, because our focus is analysing cases of SUMPs and of inclusion of logistics in mobility planning[13].

The following table shows the extent to which logistics is included in mobility planning among the 100 cities falling into the 5 selected categories (ref. to the categories from 2 to 5):

[13] It is as well out of the scope of this work an analysis of the normative issues on mobility and transport planning tools in the different Members States.

Table 5: Presence of logistics in the mobility planning in the cities panel

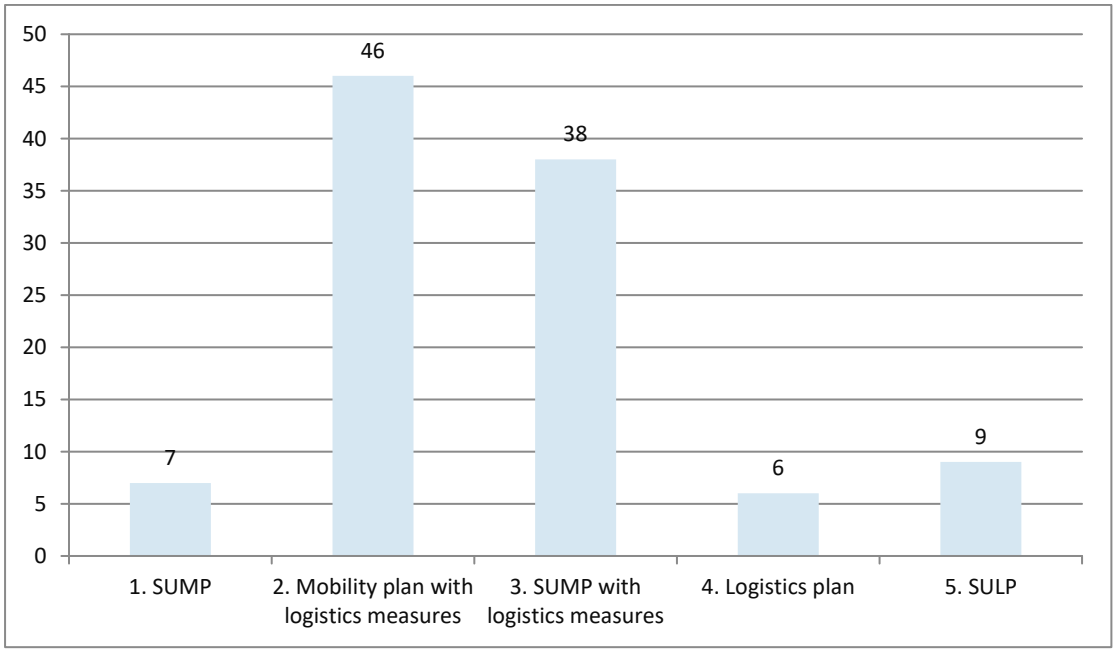
Cities groups	Frequency
Cities in category 1 (SUMP, without logistics)	7
Cities in category 2 to 5	93
TOTAL	**100**

Source: Steer Davies Gleave's elaboration

Logistics is included in 93% of the cities falling in one of the 5 categories and in 72% of the overall cities panel. Our evaluation is that logistics is on average well included into mobility planning.

In terms of frequency of planning documents for each of the 5 categories identified, the most populated categories are Mobility plans with logistics measures and SUMPs with logistics measures[14], as reported in the following figure.

Figure 4: Frequency of planning documents for each category in the cities panel



Source: Steer Davies Gleave's elaboration

The presence of Logistics plans and SULPs can be considered weak. In particular we have identified 15 cities of the panel which have developed them, as reported in the following table.

[14] We specify that the total of planning documents (106) is higher than the number of cities falling in one of the 5 categories (100), because some cities have developed more planning documents. In particular Brussels, Berlin, Stockholm and London have developed both a Mobility plan with logistics measures and a Logistics Plan. Utrecht and Malmo have developed both a SUMP with logistics measures and a Logistics plan.

Table 6: Cities of the panel with logistics plans and SULPs

Planning document	Cities
Logistics plan (category 4)	Brussels, Berlin, Utrecht, Malmö, Stockholm, London
SULP (category 5)	Balchik, Serres, Lucca, s'Hertogenbosch, Trondheim, Almada, Alba Julia, Burgos, Dundee

Source: Steer Davies Gleave's elaboration

With specific reference to SULPs, it is important to mention that all the cities in the table above were involved in the ENCLOSE EU project, which concerned the development of SULPs in the project cities. Therefore SULP concept can be considered as a specific project concept.

On the other hand the SUMPs concept is quite present in the panel: 45 cities have developed SUMPs, of which 38 also includes logistics. It is worthwhile to report that about 15.6% of the cities which have developed SUMPs have not included logistics.

Having reviewed the plans of the panel cities, our understanding is that the presence of logistics in mobility planning reflects the need of European cities to face the significant challenges that freight transport brings. Plans want to give answers to mobility problems generated by freight and ensure that freight transport continue to feed cities' activities and their competitiveness.

On the other hand, the need of a structured and harmonised process to mobility planning (e.g. according to the SUMP Guidelines) plays a pivotal role and can drive the success or failure of mobility policies, but the distinction between SUMPs and Mobility Plans is more difficult: many plans can be considered to a great extent as SUMPs and not be labelled as such.

Similar issues apply to the SULP concept, which is not present in the SUMP guidelines. In fact logistics is one of the SUMP topics, but the SUMP concept does not foresee a separate planning document in logistics to be mainstreamed into the SUMP. Ideally logistics planning is an integral part of the SUMP development and implementation. In practice logistics plans can include governance processes and methodological steps which partially differ from the steps foreseen in the ELTIS guidelines and can be not directly embedded in SUMPs.

At the same time it is possible that a logistics plan is the result of a SUMP or that a previously developed logistics plan contributes to the SUMP development. This depends on the specificity of each city, of the planning document it has developed and on the timing of these documents.

A final consideration concerns the ratio of the analysis. In particular, the categories selected are not to be meant as a scale of assessment of the quality or effectiveness of the mobility and logistics planning documents. In fact the scope of the work was to assess the extent to which logistics is included in mobility planning.

The following table reports the overview of the planning documents in the cities panel. The Appendix 2 to this report includes the sources used for the analysis. The sources are useful technical materials which can be used by partners to learn about how European cities have developed their mobility and logistics planning. In particular we have sorted sources by city to ease the consultation.

Table 7: Overview of the planning documents in the cities panel

COUNTRY	ID	CITY	1. SUMP[15]	2. Mobility Plan with logistics measures	3. SUMP with logistics measures	4. Logistics Plan	5. SULP
	1	Vienna			•		
	2	Linz					
	3	Graz			•		
	4	Salzburg			•		
AUSTRIA	5	Innsbruck					
	6	Bruges		•			
	7	Ghent		•			
	8	Antwerp		•			
	9	Liege		•			
	10	Brussels		•		•	
	11	Namur		•			
BELGIUM	12	Charleroi					
	13	Sofia					
	14	Pleven					
	15	Ruse					
	16	Varna		•			
	17	Burgas			•		
	18	Stara Zagora					
BULGARIA	19	Balchik					•
	20	Zagreb		•			
CROATIA	21	Dubrovnik	•				
	22	Prague	•				
	23	Brno	•				
CZECH REPUBLIC	24	Ostrava			•		
	25	Aalborg		•			
	26	Aarhus					
	27	Odense					
DENMARK	28	Copenhagen		•			
	29	Tallinn		•			
ESTONIA	30	Tartu		•			
FINLAND	31	Helsinki		•			

[15] With reference to the cities involved in the BUMP European project (Pleven, Ruse, Stara Zagora, Székesfehérvár, Pécs, Ploiești, Bistrița) we have not included them in the SUMP category. In fact despite the project supports the process of SUMPs development, the SUMPs of these cities are not yet available. The project report that we analysed is "BUMP – Boosting Urban Mobility Plans, Report on preparation and implementation of coaching activities, 2016".

COUNTRY	ID	CITY	1. SUMP[15]	2. Mobility Plan with logistics measures	3. SUMP with logistics measures	4. Logistics Plan	5. SULP
	32	Turku					
	33	Tampere					
	34	Toulouse			•		
	35	Marseille			•		
	36	Lyon			•		
	37	Strasbourg			•		
	38	Lille			•		
	39	Paris			•		
FRANCE	40	Nantes			•		
	41	Bremen			•		
	42	Berlin		•		•	
	43	Hannover		•			
	44	Dresden			•		
	45	Frankfurt		•			
GERMANY	46	Munich		•			
	47	Thessaloniki	•				
	48	Athens					
GREECE	49	Serres					•
	50	Székesfehérvár					
	51	Pécs					
HUNGARY	52	Győr					
	53	Dublin		•			
IRELAND	54	Cork		•			
	55	Palermo		•			
	56	Catania		•			
	57	Bari		•			
	58	Naples			•		
	59	Rome		•			
	60	Ancona					
	61	Florence					
	62	Ravenna			•		
	63	Genoa		•			
	64	Turin			•		
	65	Milan			•		
ITALY	66	Lucca					•
LATVIA	67	Riga		•			

COUNTRY	ID	CITY	1. SUMP[15]	2. Mobility Plan with logistics measures	3. SUMP with logistics measures	4. Logistics Plan	5. SULP
	68	Klaipėda					
	69	Kaunas					
LITHUANIA	70	Vilnius					
	71	s'Hertogenbosch					•
	72	Utrecht			•	•	
	73	Rotterdam		•			
THE NETHERLANDS	74	Amsterdam		•			
	75	Trondheim					•
NORWAY	76	Oslo					
	77	Kraków		•			
	78	Wrocław			•		
	79	Warsaw		•			
POLAND	80	Szczecin	•				
	81	Lisbon			•		
	82	Coimbra	•				
	83	Porto					
PORTUGAL	84	Almada					•
	85	Târgu Mureș					
	86	Timişoara			•		
	87	București	•				
	88	Constanța			•		
	89	Iași					
	90	Ploiești					
	91	Alba Julia					•
ROMANIA	92	Bistrița					
	93	Bratislava					
	94	Košice			•		
SLOVAKIA	95	Žilina			•		
SLOVENIA	96	Ljubljana			•		
	97	A Coruña			•		
	98	Bilbao					
	99	San Sebastián			•		
	100	Burgos					•
	101	Zaragoza			•		
	102	Barcelona			•		
SPAIN	103	Huelva			•		

COUNTRY	ID	CITY	1. SUMP[15]	2. Mobility Plan with logistics measures	3. SUMP with logistics measures	4. Logistics Plan	5. SULP
	104	Córdoba			•		
	105	Valencia			•		
	106	Murcia			•		
	107	Málaga			•		
	108	Sevilla		•			
	109	Madrid			•		
	110	Terrassa			•		
	111	Malmö			•	•	
	112	Göteborg		•			
SWEDEN	113	Stockholm		•		•	
	114	Basel					
	115	Zurich		•			
SWITZERLAND	116	Geneva		•			
	117	Belfast		•			
	118	Dundee					•
	119	Edinburgh		•			
	120	Glasgow		•			
	121	Bradford		•			
	122	Leeds		•			
	123	Liverpool		•			
	124	Cambridge		•			
	125	Norwich		•			
	126	Gloucester		•			
	127	Cardiff		•			
	128	Bristol		•			
UNITED KINGDOM	129	London		•		•	

Source: Steer Davies Gleave's elaboration

3. Analysis of selected city cases with logistics in urban mobility planning

This chapter focuses on the detailed analysis of the mobility and logistics planning documents of 10 European cities which included logistics in urban mobility planning.

The following table includes the list of cities, their population and the planning documents that we analysed[16].

Table 8: Selected cities, population and planning documents analysed

Inhabitants	Population	Planning document(s) analysed	Type of document in the categorisation adopted
Vienna	1,714,142	- Vienna City Administration, Urban Mobility Plan Vienna, 2015	- SUMP with city logistics measures (cat. 3)
Brussels	1,187,890	- Bruxelles Mobilité, Plan de Mobilité Région Bruxelles Capitale, 2011 - Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013	- Mobility with city logistics measures (cat. 2) - Logistics plan (cat. 4)
Zagreb	792,875	- IPZP Ltd, Master Plan of the transport system of the City of Zagreb, Zagreb County and Krapina-Zagorje County, 2016	- Mobility Plan with city logistics measures (cat. 2)
Toulouse	461,190	- Tisséo - Syndicat Mixte des Transports en Commun de l'Agglomération Toulousaine, PDU - Plan de Déplacements Urbains de la grande agglomération toulousaine, 2012	- SUMP with city logistics measures (cat. 3)
Paris	2,229,621	- Île-de-France & STIF, Plan de déplacements urbains d'Île-de-France, 2015	- SUMP with city logistics measures (cat. 3)
Turin	892,649	- Città di Torino, Piano Urbano della Mobilità Sostenibile, 2010	- SUMP with city logistics measures (cat. 3)
Utrecht	330,772	- Gemeente Utrecht, Utrecht Attractive and Accessible: Smart Routes, Smart Management, Smart Urban Planning – A SUMP for Utrecht, 2015 - City of Utrech, Taking a more sustainable approach to freight, 2013	- SUMP with city logistics measures (cat. 3) - Logistics plan (cat. 4)
Almada	160,825	- MemEx, ENCLOSE project - SULP Portfolio, 2016	- SULP (cat. 5)
Burgos	179,251	- MemEx, ENCLOSE project - SULP Portfolio, 2016	- SULP (cat. 5)
Stockholm	900,789	- City of Stockholm, Urban Mobility Strategy, 2012 - Stockholm Stad, The Stockholm Freight Plan 2014-2017, 2014	- Mobility Plan with logistics measures (cat. 2) - Logistics plan (cat. 4)

Source: Steer Davies Gleave's elaboration

Each of the cities is described in terms of:

- a short description of the city context and dimension;
- an abstract of the logistics / mobility plan;
- the planning document positioning versus the SULP concept;

[16] The list of analysed documents was drafted on the base of publicly available information.

- the plan governance and process including eventual relations to the SUMP concept;
- an overview of the main urban logistics measures which are part of the plan.

3.1. Vienna (Austria)

VIENNA CONTEXT

Vienna is the capital and largest city of Austria as well as its cultural, economic, and political centre. Its population is around 1.7 million inhabitants (2.6 million in the metropolitan area which amounts to about one third of the Austrian population).

Vienna is located in the North-East of Austria and it is crossed by the Danube river and by and one artificial canal. The city is an important node in the European transport network, with an important connecting role between East and West Europe. It is part of three TEN-T Core network Corridors: Rhine-Danube, Baltic-Adriatic and Orient/East-Mediterranean.

ABSTRACT OF THE MOBILITY PLAN

The document that we analysed is the Urban Mobility Plan, written adhering to the SUMP standards set by the European Commission[17]. It has been drafted based on overarching policy set in the Urban Development Plan (STEP 25), the transport master plan (MPV 03), as well as the Climate Protection Programme of the City of Vienna's Smart City Wien Framework Strategy.

This shows how the development of a SUMP presents significant policy links with pre-existent policy documents and, in a cross-disciplinary perspective, with policy documents in thematic fields relevant to mobility.

The core message of the Plan is to foster the Eco-mobility under the slogan "Enabling mobility without car ownership", in order to face the population growth without reducing the quality of life. The core goal is achieving a target of 80% of trips covered by public transport, cycle or walk.

In particular, according to the Plan's objectives, mobility services are to be:

1. Fair: street space is allocated fairly to a variety of users and sustainable mobility must remain affordable for all.
2. Healthy: the share of active mobility in every-day life increases, while accident-related personal injuries decline.
3. Compact: the distances covered between work, home and leisure time activities are as short as possible.
4. Eco-Friendly: mobility causes as little pollution as possible (also by increased use of bikes and public transport).
5. Robust: mobility is as reliable and crisis-proof as possible and should be possible without necessarily owning means of transport.
6. Efficient: resources are used in a more efficient way – helped by innovative technologies and processes.

As part of the SUMP, the city of Vienna has set logistics measures, which are included under the so called "Fields of action: business in motion". Each measure was assessed in the Plan in terms of contribution to the 6 above mentioned objectives.

[17] Vienna City Administration, Urban Mobility Plan Vienna, 2015 (https://www.wien.gv.at/english/urbandevelopment/)

The logistics measures have the purpose of addressing three main issues:

1. Modal shift. The functioning of commercial transport in a growing and very densely built-up city cannot depend on new roads or on the further expansion of existing ones. Therefore, modal shift potentials must be used by all means, relying on modes of transport which are efficient in terms of space and energy.
2. More efficiency, fewer emissions. If logistics generates low noise and emission levels, it can make a significant contribution to increase the quality of life and of the environment. At the same time efficient commercial transport management (possibly not fossil fuelled) will be in the interest of businesses in terms of reducing transport costs.
3. Cooperation and innovation for commercial transport. A continuous and open dialogue between the city administration, enterprises and logistics providers is necessary to develop strategies and solutions for cost-effective, efficient and resource-conserving commercial transport. New technology, innovative processes and improved conditions in the city space are to be the drivers of this change.

POSITIONING VERSUS THE SULP CONCEPT

According to the proposed classification of mobility and logistics planning documents, Vienna presents a SUMP that includes logistics measures (category 3).

The analysis of the Mobility Plan highlights a high level of maturity in mobility issues. Urban logistics has a dedicated section in the Plan which witnesses that logistics is a policy priority of the city.

PLAN GOVERNANCE AND PROCESS INCLUDING EVENTUAL RELATIONS TO THE SUMP CONCEPT

Vienna's Mobility Plan is a SUMP and it is developed according to the ELTIS guidelines.

The Urban mobility plan has been conceived with a strong participatory approach. It is the outcome of a process that has brought together key players and stakeholders since the Plan's start-up phase. At the same time the Plan is part of wider municipal strategies and part of a regional policy aiming at bringing together neighbouring regions to work together on mobility. Therefore, the participatory process and the horizontal and vertical governance which are to be found in a SUMP are fully present in Vienna Mobility Plan.

In particular, from a practical perspective, the SUMP process started from the evaluation of the previous Transport Master Plan. Brainstorming sessions with experts were organised and recommendations were formulated. On the basis of the conclusions of this first phase, the SUMP process involved citizens and interest groups, which were informed and consulted. The results of this second stage were channelled into a draft version of the development strategy STEP 2025 and into the Urban Mobility Plan.

The work was then processed by an *ad hoc* team, the "Working Group on Mobility". This Group worked with various units and enterprises of the City of Vienna; it involved representatives of districts, citizens, further experts and interest groups and it drafted the final version of the SUMP.

OVERVIEW OF THE MAIN URBAN LOGISTICS MEASURES

The main urban logistics measures included in the SUMP are reported in the following table.

Table 9: Urban logistics main measures in Vienna Mobility Plan

ID[18]	Measure	Description
Vienna.01	**Creation of a data sharing system on mobility**	The City of Vienna Administration, the Vienna utilities and Wiener Linien collect and manage numerous mobility-related data sets (e.g. traffic census, modal split indicators etc.) in decentralised databases. A data sharing system is to be created to facilitate the availability of mobility data across departments and institutions. This also concerns data on commercial traffic and goods transport, by involving further stakeholders (e.g. the Economic Chamber of Vienna and the Chamber of Labour of Vienna).
Vienna.02	**Further development of goods distribution centres and a concept for commercial use areas**	Rail transport and the Danube as a navigable waterway are priorities in Vienna. Thus, the city is driving the further development of the two major goods distribution centres in cooperation with Lower Austria: the port of Vienna (tri-modal logistics centre) and the goods terminal of Inzersdorf. Moreover logistics requirements are also to be included in the development of factory areas.
Vienna.03	**Multifunctional lanes with loading zones for private and business transport**	Multifunctional lanes allow to flexibly using street space. Such flexibility results from the structural design of the space between pavement and carriageway. Loading and unloading areas are parts of the multifunctional lanes and will not exclusively be created in the interest of individual enterprises but as a solution for several players in the area. This measure goes together with the parking schemes of the City.
Vienna.04	**Creation of joint loading yards**	This type of infrastructure serves to accommodate the (un)loading of goods. They are to be designed for common use by several adjoining shops and businesses (e.g. supermarkets) to move loading activities out of the public space. Loading yards should be roofed over to protect residents from noise and emissions.
Vienna.05	**Community parcel boxes for deliveries**	E-commerce is becoming more and more popular causing an increase in parcel delivery services. Community pick up points should be set up to optimise delivery trips. Parcel boxes can be located close to public transport stops. Parcel boxes could be used also by local businesses to receive goods.
Vienna.06	**Good conditions for freight bikes**	The City has the purpose to create the conditions for freight bikes, particularly in traffic-calmed areas banned to delivery vans. The use of freight bikes avoids noise and emission. A system of incentives/grants will be created. The same City of Vienna plans to use cargo bikes.
Vienna.07	**Targeted funding of e-mobility**	The City of Vienna has defined a long-term goal of emission-free local delivery and consequently created a grant towards e-vehicles used for commercial purposes (e.g. corporate fleets, taxis, regional commercial transport). The measure must be integrated with the development of charging stations and measures for e-mobility marketing.
Vienna.08	**Introduction of a general truck toll**	The City of Vienna joins the Austria-wide initiative of reviewing the legal and technical feasibility of a general truck toll. The City of Vienna is supporting the implementation of the truck toll as a measure to be taken at federal level. The expected results are the increased efficiency in truck trips and decreasing pollution.

Source: Steer Davies Gleave's elaboration on "Vienna City Administration, Urban Mobility Plan Vienna, 2015"

[18] Each measure is marked with an ID in order to ease the overall measures consultation table which is reported as an Appendix to this report.

3.2. Brussels (Belgium)

BRUSSELS CONTEXT

Brussels is the capital of Belgium with about 1.2 million inhabitants and about 2.7 million inhabitants in the metropolitan area. The city represents a core node in the European TEN-T Network and it is located on 3 Core Corridors: North Sea – Baltic, Rhine – Alpine, North Sea – Mediterranean.

The metropolitan area covers part of Flanders and Wallonia regions and a cooperation of the three regions is required in the implementation of many activities concerning the transport sector.

As far as the economic activities are concerned, the region registers a predominance of private services compared to industrial activities. In particular: the industry sector covers 7% of the total economic activities, while private services 77% and transport and wholesale trade 13%.

ABSTRACT OF THE MOBILITY AND LOGISTICS PLANS

The two available online documents which were considered in this analysis are:

- Bruxelles Mobilité, Plan de Mobilité Région Bruxelles Capitale, 2011;
- Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013.

The first document (Mobility Plan) includes both freight and passengers transport; in particular it includes a specific chapter on logistics (chapter 8 “Améliorer la logistique et la distribution des marchandides”). The second document (Logistics Plan) specifically focusses on freight transport.

The Mobility Plan highlights the transport policy directions of the Région de Bruxelles-Capitale in the period 2015-2020. It gives continuity to a transport planning process started in 2002 and to the strategic objectives of the Regional Development Plan of 1998.

The 8 axes of the Plan are:

1. Foster active travel (cycling and walking);
2. Improve public transport;
3. Develop a rational and hierarchical roads system;
4. Rationalise private car use;
5. Developing a coordinated and regulated parking policy;
6. Coordinate transport and territorial planning;
7. Develop information systems for mobility;
8. Optimise logistics and freight distribution;
9. Improve the governance of mobility planning.

With specific reference to Axis 8 concerning freight transport the goals are:

- Foster inland waterways, rail and multimodal freight transport;
- Improve Heavy Goods Vehicles (HGV) traffic management and their loading and unloading operations;
- Optimize the location of companies with logistics needs according to the regional plan in order to improve HGVs’ accessibility;
- Study the implementation of one or more Urban Distribution Centres (UDC) serving commercial establishments in the first city ring;
- Optimize urban spaces for heavy vehicles in cooperation with neighbours.

The Logistics Plan is in line with the policy lines of the Mobility Plan and it develops a policy strategy concerning the competiveness, sustainability and safety of freight transport aimed at:

- Ensuring goods supplies to the city;
- Reducing freight transport nuisances;
- Integrating logistics activities in the region;
- Ensuring sustainable development.

The document is based on a SWOT analysis of the logistics sector in the Region, including qualitative and quantitative analyses.

The five strategic axes of the Plan are:

- Physical structure of urban distribution. The goal is developing a distribution network of distribution centres in different locations (centralised and de-centralised) serving the needs of different supply chains.
- Territorial planning and real estate. The goal is to face the problem of scarce land availability and take into consideration the need for logistics spaces both in real estate investments and in public spatial planning.
- Operational measures for urban distribution. The goal is having an operative vision which improves urban freight transport both by infrastructural and regulatory measures.
- Research and innovation. A research and innovative perspective in logistics is needed both in businesses and in public policies.
- Capital Region as facilitator. The Region should develop accompanying measures impacting on the organisation of freight transport and it should put in place awareness measures towards urban freight stakeholders.

POSITIONING VERSUS THE SULP CONCEPT

The city has both a Mobility Plan with city logistics measures and a Logistics Plan.

Despite they are not labelled as SUMP and SULP, they are very structured and articulated and, according to the information reported in the plans, they were built based on participatory processes.

They fully serve the purposes that SUMPs and SULPs have.

Moreover they provide an exhaustive list of urban logistics measures which can be very interesting for the SULPiTER cities.

PLAN GOVERNANCE AND PROCESS INCLUDING EVENTUAL RELATIONS TO THE SUMP

With specific reference the development process of the Logistics Plan, public and private stakeholders were interviewed and consulted to study the logistics situation in the region (e.g. logistics industry, shippers and retailers).

The interviews represented the baselines for four workshops organized in 2011. The first three workshops focused primarily on freight flows and infrastructures issues and the fourth workshop turned discussions into the identification of the main logistics objectives of the Plan.

The study and the analysis of the logistics state-of-play contributed to provide an integrated view of the topic, which represented the baseline of the action plan for freight transport in the city.

A wider consultation with Flanders and Wallonia regions was also required in the development of the Plan.

A draft Plan was prepared in 2013 and it was approved by the Government after a consultation with the Mobility Regional Commission, the Social and Economic Council, the Environmental Council and further stakeholders.

OVERVIEW OF THE MAIN URBAN LOGISTICS MEASURES

We describe hereafter some selected logistics measures included in the Logistics Plan:

Table 10: Urban logistics measures in Brussels Logistics Plan

ID	Measure	Description
Brussels.01	**Identify and reserve land for urban distribution**	The measure focuses on the planning of land areas for logistics purposes. In particular it defines different types of land-use for different types of logistics areas: multimodal land, UDC land for big distribution areas, small logistics areas next to rivers, logistics zones for urban and industrial areas.
Brussels.02	**Freight routes**	The measure is a planned solution for the improvement of the efficiency of freight deliveries and it provides routes and signage for freight vehicles to access transport nodes and industrial areas. This is aimed at avoiding overlaps of freight and private mobility and increase the commercial speed of freight fleets.
Brussels.03	**Tolling freight transport**	The measure focuses on road tolling similar to the initiatives adopted in France and Germany for heavy goods vehicles. The system is planned to be consistent to the Eurovignette Directive and also concerns the neighbouring regions of Flanders and Wallonia. This measure has the aim of internalising transport external costs.
Brussels.04	**Night deliveries**	The measure plans to reduce congestion and increase traffic safety by developing both off-peak hours and night deliveries[19]. The PIEK protocol concerning noise emissions for night deliveries is also planned to be taken into consideration[20].
Brussels.05	**Service and delivery plans**	The measure proposes plans to optimise deliveries to and from shippers (also using environmentally friendly vehicles). Currently the enterprises with more than 100 employees must adopt such plans. The Brussels Logistics Plan want to evaluate the applicability of the plan based on the number of shipments.
Brussels.06	**Mobile depot**	The measure consists in a trailer which is loaded as a depot outside the city and that is moved in a central parking location within the city. Last mile deliveries are made by sustainable vehicles, such as electric tricycles or small electric cars[21].

Source: Steer Davies Gleave's elaboration on "Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013"

3.3. Zagreb (Croatia)

ZAGREB CONTEXT

Zagreb is the political, economic, scientific and cultural capital city of Croatia with approximately 790,000 inhabitants. It is located at the intersection of several important trade routes between the

[19] More information on night deliveries tests in Brussels can also be found in the following STRAIGHTSOL EU project report at page 24: https://drive.google.com/file/d/0ByCtQR4ylfYDUFU1X2d5dkdReEk/view.

[20] More information on the PIEK system for silent deliveries can be found at: http://www.piek-international.com/english/.

[21] More information on the mobile depot experience in Brussels can be also found in the following STRAIGHTSOL EU project report at page 13. https://drive.google.com/file/d/0ByCtQR4ylfYDUFU1X2d5dkdReEk/view.

Adriatic coast and Central Europe and it is located on the Mediterranean Core Network Corridor of the TEN-T.

Given the high concentration of population and intensive economic activities, the city presents a high level of motorization and congestion due to heavy goods vehicles.

ABSTRACT OF THE MOBILITY PLAN

The Master Plan of the transport system of the City of Zagreb, Zagreb County and Krapina-Zagorje County is being drafted by the City in cooperation with the Counties of Zagreb and Krapina-Zagorje and it has a regional focus, including the Functional Urban Area[22].

The Plan has the following main goals:

- Improve transport accessibility to the whole area through the development of an efficient and sustainable transport system;
- Enable greater mobility of the population using the modes of transport that are environmentally friendly, and energy and cost effective for society;
- Integrate transport subsystems through institutional, organizational and infrastructural improvements, with particular emphasis on the integration of public transport systems;
- Increase traffic safety.

It identifies a set of infrastructural projects for the region, among which a project concerning the implementation of a central distribution station for road freight traffic in the city.

The Master Plan is under development and it includes two phases:

- Phase 1 concerns the analytical activities for the Plan development (analysis of the current situation and the development of transport models);
- Phase 2 concerns the development and selection of transport solutions and the implementation of strategic environmental impact assessment.

It is worthwhile to say that some city logistics experiences were developed in Zagreb. These initiatives were not part of mobility plan of the city. In particular we mention:

- Delivery and Servicing Plans, which were tested within the TRAILBLAZER Project[23] (Intelligent Energy Europe);
- Complementary activities concerning urban freight regulation which were developed in the CIVITAS initiative.

In particular, as mentioned in the CIVITAS web site[24], the experiences had demonstrative nature and suffered the commitment of stakeholders for a wider application.

[22] A description of the Master Plan is at: http://www.ipzp.hr/en/master-plan/.

[23] The project DSP toolkit including a framework for creating DSPs can be found at: https://ec.europa.eu/energy/intelligent/projects/sites/iee-projects/files/projects/documents/trailblazer_dsp_toolkit_en.pdf.

[24] http://www.civitas.eu/content/freight-delivery-restrictions

POSITIONING VERSUS THE SULP CONCEPT

According to the classification that we set concerning mobility and logistics planning documents, we have not sufficient information to consider the Master Plan as a SUMP. In fact it is in its development phase. Moreover it cannot be considered a SULP because it is not specifically focussed on urban logistics.

PLAN GOVERNANCE AND PROCESS INCLUDING EVENTUAL RELATIONS TO THE SUMP

With reference to the Master Plan and concerning its governance, it is worthwhile to stress the Plan is developed in cooperation between the City and Counties. As mentioned above, there are no sufficient elements to identify relations with the SUMP concept.

This is also confirmed by the fact that the City of Zagreb is still active in the process of developing its SUMP by actively participating to the CH4LLENGE project[25].

OVERVIEW OF THE MAIN URBAN LOGISTICS MEASURES

The Master Plan presents different infrastructural measures. Nevertheless the information available seems to indicate that there is not an organisational and logistics focus in the Plan.

The only urban logistics measure is reported in the table below.

Table 11: Urban logistics measure in Zagreb Mobility Master Plan

ID	Measure	Description
Zagreb.01	**Central distribution station for road freight traffic**	The measure can be interpreted as a consolidation facility which can serve the city and the region, developing freight optimisation and economies of scale to increase load factor.

Source: Steer Davies Gleave's elaboration on "The City Of Zagreb, Implementing regulatory measures in order to optimize freight deliveries (TRAILBLAIZER project, IEE), 2013"

3.4. Toulouse (France)

TOULOUSE CONTEXT

Toulouse is the fourth largest city in France with a population of about 460,000 inhabitants in the inner city and around 1.3 million in the metropolitan area.

It is the capital city of the South-Western French department of Haute-Garonne, as well as of the Occitan Region. It lies on the banks of the River Garonne. It is part of the Core TEN-T Network connecting Narbonne and Bordeaux.

It is the centre of the European aerospace industry and it hosts the fourth largest university campus in France.

ABSTRACT OF THE MOBILITY PLANS

The document that we have analysed is "Tisséo - Syndicat Mixte des Transports en Commun de l'Agglomération Toulousaine, PDU - Plan de Déplacements Urbains de la grande agglomération toulousaine, 2012".

It can be considered the SUMP of Toulouse's agglomeration. It is developed according to national rules which foresee that all territorial contexts with more than 100,000 inhabitants develop a *Plan de Déplacements Urbain* (PDU).

[25] http://www.sump-challenges.eu/content/city-zagreb

The Plan represents the fundamental policy document in transport field and it updates the previous PDU dated 2001.

The document approaches mobility issues on a wider territorial scale by identifying and analysing mobility basins. It focuses on:

- urban development;
- public transport;
- cycling and walking;
- road transport;
- parking;
- industrial settlements.

Urban logistics is included in the Plan and the following challenges are identified:

- Using regulatory and planning tools, in particular with reference to the inclusion of transport and of dedicated facilities in urban development documents, and to the coherence of regulatory schemes in the city;
- Optimising freight flows, in terms of fostering multimodal transport, developing logistics areas and HGV routing and favouring clean vehicles;
- Optimising loading and unloading and parking of freight vehicles, in particular by developing suitable areas and enforcing.

POSITIONING VERSUS THE SULP CONCEPT

Despite the Plan is not specifically focussed on logistics, urban freight is strongly embedded in the plan, both in terms of transport demand and supply perspectives.

This is reflected in the identification of specific urban logistics measures.

PLAN GOVERNANCE AND PROCESS INCLUDING EVENTUAL RELATIONS TO THE SUMP CONCEPT

From a process point of view, the development of the Plan is well structured according to sequential phases of analysis, consultation and development. It is part of a structured policy process following the PDU dated 2001.

From a governance point of view the development of the Plan was based on a formalised institutional process which included a vast number of stakeholders and different Commissions[26]. This ensured a participatory approach within the wider urban community.

We think we can consider the Plan fully in line with the SUMP concept.

OVERVIEW OF THE MAIN URBAN LOGISTICS MEASURES

The main logistics measures of the Plan are reported in the following table.

[26] For more details on the specific institutional process please see page 18 of the Plan.

Table 12: Urban logistics measures in Toulouse Mobility Plan

ID	Measure	Description
Toulouse.01	**Freight transport *Atelier***	The measure focuses on governance in urban freight and in particular in the creation of working groups which foster participation of stakeholders and interactions between public policies and urban logistics actors' needs.
Toulouse.02	**Extending the *Charte livraison***	The *Charte livraison* is the system of rules and principles for accessing the city; it is agreed by the City, the Chamber of Commerce and associations of logistics operators. The measure wants to extend the *Charte* rules to a wider territorial scale (inter-municipal level / PDU level) and to enforce them.
Toulouse.03	**Create freight re-distribution sites**	The measure focuses on the creation of more goods storage and re-distribution sites to answer the development of the metropolitan area. Different types of platforms are envisaged, including multimodal ones[27].
Toulouse.04	**Freight routes**	The measure has the aim of overcoming the lack of regulations in freight routes and of consequently reducing HGVs impacts in the urban area. In particular it aims at improving the vehicles flows management in the city.

Source: Steer Davies Gleave's elaboration on "Tisséo - Syndicat Mixte des Transports en Commun de l'Agglomération Toulousaine, PDU - Plan de Déplacements Urbains de la grande agglomération toulousaine, 2012"

3.5. Paris (France)

PARIS CONTEXT

Paris has around 2.2 million inhabitants in 20 neighbours (*arrondissements*). It is a core node in road, rail and waterways networks within the Ile-de-France Region and it is located on the Atlantic and North Sea – Mediterranean TEN-T Core Network Corridors.

River and rail transport play an important role in the region: the waterway network includes the Seine, Oise and Marne affluent and three canals; there are 6 main rail stations.

Logistics is the second sector of the region in terms of employment, after public services; 221 million tons of goods are generated by the Region, without considering transit flows and import/export trades with foreign countries.

ABSTRACT OF THE MOBILITY PLAN

The document analysed in this city case is the" Île-de-France & STIF, Plan de déplacements urbains d'Île-de-France, 2015".

This type of plan is mandatory in France for all territorial contexts with more than 100,000 inhabitants. It is consistent with other two plans of Île-de-France: the General Master Plan (*Schéma régional climat, air, énergie* – SRCAE) and the Climate, Air and Energy Master Plan (Schéma directeur de la Région Île-de-France – SDRIF)[28].

The plan's time horizon spans on a period from 2014 to 2020. It is very articulated and its overall goal is a reduction of gas emissions and of atmospheric pollution by 20%. This objective is specified in three sub-objectives:

- an increase of the public transport share by 20%;

[27] Among the initiatives of freight consolidation (UDC), we mention the following one which is in place and managed by Chronopost: http://www.civitas.eu/sites/default/files/20120703_civitas_freight_measures_evaluation.pdf (page 7)

[28] http://www.pduif.fr/-Le-PDUIF-c-est-quoi-.html

- an increase of soft mobility alternatives (walk and cycling) by 10%;
- a reduction of car and motorcycle flows by 2%.

After an introduction and definition of the main objectives of the Plan, the document provides a systematic and practical vision of the crucial issues that need to be addressed.

In particular the Plan identifies 9 challenges:

1. Developing a city environment more suitable to public transport, walking and cycling.
2. Increasing public transport attractiveness.
3. Fostering walking as key transport mode.
4. Creating the conditions to exploit cycling.
5. Acting on private car mobility.
6. Improving accessibility for all transport categories.
7. Optimising freight traffic and favouring rail and inland waterways transport.
8. Developing governance to mobilise stakeholders in the PDU implementation.
9. Increasing citizens' awareness and making their modal choices more responsible and sustainable.

The 7th challenge is on urban logistics and it identifies numerous planned measures (defined as "actions" in the Plan) that will contribute to improve the logistic sector within the metropolitan and regional context.

In particular the measures aim at developing:

- logistics infrastructures;
- traffic and parking regulations;
- technological innovation;
- governance in logistics.

The document concludes with an assessment of the impacts of PDU in terms of mobility and environmental benefits and quantifies the costs of the proposed actions.

POSITIONING VERSUS THE SULP CONCEPT

The Plan is both focussing on passengers and freight transport and the latter is fully embedded in the Plan, both in terms of analytical activities and of proposed measures.

That is to say that the Mobility Plan seam to include a logistics plan (and related measures) and it is developed according to a process and governance which is in line with the ELTIS guidelines.

PLAN GOVERNANCE AND PROCESS INCLUDING EVENTUAL RELATIONS TO THE SUMP

The Plan can be considered a SUMP.

The development of the Plan was based on participatory approach including numerous public and private stakeholders. This process was strongly structured and it lasted 6 years. In particular a Committee were created to develop the Plan including authorities at different territorial levels, transport nodes and operators, and all the main associations. Citizens and businesses were also informed and consulted[29].

[29] For more details concerning the process and governance of the Plan please see pages 17 – 22 of the plan: http://www.pduif.fr/IMG/pdf/pduif_2014.pdf

OVERVIEW OF THE MAIN URBAN LOGISTICS MEASURES

The urban logistics measures included in the Plan are reported in the following table.

Table 13: Urban logistics measures in Paris Mobility Plan

ID	Measure	Description
Paris.01	**Preserve and develop logistics sites**	The measure concerns the "preserving" of existing multimodal sites (in particular rail and inland waterways) both in the inner and wider urban area, as well as the developing of new logistics sites. The core KPI is that of having about 4 hectares of logistics land for 100,000 inhabitants.
Paris.02	**Develop inland waterways transport**	The measure concerns supporting river transport for: - Specific supply chains (e.g. construction, excavated materials, waste). The use of river transport could also be a public procurement criterion in the construction sector. - Urban freight distribution. - The measure also includes funding shippers to develop river infrastructures and equipment.
Paris.03	**Improve rail transport**	The measure foresees a better organisation of freight and passengers train paths, by also investing in technologies and infrastructures. The measure also focuses on the use of tramways for freight deliveries. Finally the measure concerns the improvement of rail nodes operations.
Paris.04	**Improve the effectiveness of road freight transport and optimising deliveries**	The measure concerns multiple issue and in particular: - improving road infrastructures access to multimodal terminals; - easing HGVs parking on the main road network; - routing HGVs; - harmonising delivery rules in terms of time windows and routes; - optimising dimensions of loading and un-loading areas and applying enforcing on their use.
Paris.05	**Favouring the diffusion of clean freight fleets**	The measure concerns the development of joint procurement schemes usable by SMEs, as well as the introduction of regulations limiting the circulation of polluting vehicles.

Source: Steer Davies Gleave's elaboration on "Île-de-France & STIF, Plan de déplacements urbains d'Île-de-France, 2015"

The Paris case is very reach not only in terms of measures included in the Mobility Plan, but also in experiences in urban logistics developed in the city. We have selected a list of further specific and applied measures.

The applications are consistent with the Plan's objectives and measures. We report these experiences in the following table, which in our opinion includes valuable examples for the SULPiTER partners.

Table 14: Urban logistics applications in Paris

ID	Measure	Description
Paris.06	**Monoprix**	The retailer Moniprix has developed a delivery service combining rail transport and last mile deliveries with trucks equipped with anti-noise devices. In particular the transport scheme includes a 30km rail freight service between a distribution centre in Combs la Ville and the Paris Bercy station. Goods are then transported to 72 stores.[30]
Paris.07	**Tramfret**	The project concerns a dedicated freight tram service from a distribution centre to urban city stores next to the tram line. It has involved Carrefour and Casino supermarkets.[31]
Paris.08	**Distropolis**	The measure develops small Urban Consolidation Centres located in the city centre, where trucks deliver goods from a central depot in Bercy. The last mile delivery is implemented with battery-electric vehicles.[32]
Paris.09	**Supermarket stores deliveries using waterways**	This is an innovative solution for deliveries from regional distribution centres to retail shops. Fanprix supermarket store use the Seine river to receive goods in Quai de la Boudonnais and from there a last-mile delivery service by truck is provided.[33]
Paris.10	**La Petit Reine**	The measure concerns a clean delivery service from big stores to consumer homes. The service is made by electrical vans and electrically-assisted cargo tricycles. The choice of vehicles was due to the dense urban contexts and it represents a sustainable alternative to vans and light commercial vehicles.[34]
Paris.11	**Creating delivery area for big generators**	This measure has been planned in the urban local plan of 2006. It aims at creating logistics areas for stores with at least 500 sqm, offices of at least 2500 sqm and hotels with minimum 150 rooms. It foresees to address the freight delivery needs of big urban traffic generators.[35]
Paris.12	**Chonopost concorde**	The solution is characterized by an underground urban logistic area of 1000 square meters under the Place de la Concorde where goods, arriving from Bercy, are delivered to the 7th and the 8th boroughs by clean fleets.[36]

Source: Steer Davies Gleave's elaboration on different sources as in foot notes

[30] Source: Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013 (page 43)

[31] Source: Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013 (page 67)

[32] Source: http://www.bestfact.net/wp-content/uploads/2016/01/CL1_052_QuickInfo_Distripolis-16Dec2015.pdf

[33] Source: http://www.bestfact.net/wp-content/uploads/2016/01/CL1_051_QuickInfo_Franprix-en-Seine-16Dec2015.pdf

[34] Source : http://www.bestfact.net/wp-content/uploads/2016/01/CL1_091_QuickInfo_La-Petite-Reine-16Dec2015.pdf

[35] Source: Mairie de Paris, Le transport de marchandises dans la Ville de Paris, public presentation, 2009 (pare 10)

[36] Sources: Mairie de Paris, Le transport de marchandises dans la Ville de Paris, public presentation, 2009 (page 16) and SINTEF Technology and Society, State of the art report. Urban logistics practices, 2012 (https://www.sintef.no/contentassets/067ef756b7644281ad2514bef7955c53/gbo/gbo-l-2.1-state-of-the-art-report--urban-logistics-practices_l.pdf)

3.6. Turin (Italy)

TURIN CONTEXT

The City of Turin has about 890,000 inhabitants and its metropolitan area has about 1.5 million. It is located in the North-Western part of Italy on the Mediterranean TEN-T Core Corridor.

Turin, as well Piedmont region, has a strong industrial vocation related to the automotive sector. It also presents other important companies in the textile and foods sectors. The city also represents a cultural centre.

ABSTRACT OF THE MOBILITY PLAN

The document that we analysed is Turin Sustainable Urban Mobility Plan[37].

The SUMP is defined by the City of Turin as dynamic plan, which can tune and adapt its actions and measures within the principles that inform it.

The Plan is structured in: guiding principles, actions, operative measures. Each operative measures is matched with the issues of economic, social and environmental sustainability.

The Plan includes 7 guiding principles[38]. Urban logistics is one specific operative measure within the Action concerning air quality. Other operative measures also and transversally support a better urban freight distribution.

The Plan's strategic goals are:

- traffic improvements;
- an accessible and safe urban transport;
- a clean city.

A second important document to be considered in our analysis is the Agreement signed between the City of Turin, the Chamber of Commerce and local Associations, which is defined as the "Chart for logistics and for the optimization of urban freight distribution". The agreement is a measure focused on a green vehicles and platforms recognition[39]. In our opinion it implements the SUMP.

In addition, the City of Turin has also signed a National Agreement with the Ministry of Transport and other Italian metropolitan cities in which Authorities cooperate to improve urban freight transport.

POSITIONING VERSUS THE SULP CONCEPT

According to the classification proposed, Turin presents a SUMP with logistics measures, subsequently complemented by an Agreement with local actors focused on logistics improvement. The documents that we analysed do not themselves represent a Logistics Plan or a SULP. Despite this, the city has in place a policy on urban logistics.

[37] Comune di Torino, Piano Urbano della Mobilità Sostenibile, 2010. The Plan and all the related documents can be found at this link: http://www.comune.torino.it/geoportale/pums/cms/

[38] The guiding principles are: 1. Ensure and improve territorial accessibility; 2. Ensure and improve people accessibility; 3. Improve air quality; 4. Improve the quality of the urban environment; 5. Foster public transport; 6. Ensure transport efficiency and safety; Manage mobility through technology; 7. Define the Plan governance.

[39] Protocollo d'intesa tra Comune di Torino, Camera di Commercio e le Associazioni firmatarie – Patto per la logistica e per la razionalizzazione della distribuzione urbana delle merci, 27th September 2013.

PLAN GOVERNANCE AND PROCESS INCLUDING EVENTUAL RELATIONS TO THE SUMP

The Mobility Plan was conceived according to the SUMP guidelines. The same Plan has governance as one of its guiding principles and it includes operative measures concerning regular consultations and awareness actions.

The SUMP follows a long terms mobility planning processes, according to the Italian provisions concerning planning tools.

OVERVIEW OF THE MAIN URBAN LOGISTICS MEASURES

The measures concerning logistics are mainly found in the guiding principle 3 on air quality[40]. They are described in the following table. These measures are complemented by further measures concerning on board vehicles systems and enforcement in other guiding principles of the Plan.

Table 15: Urban logistics measures in Turin Mobility Plan

ID	Measure	Description
Turin.01	**Economic incentives to LNG vehicles**	The measure is not specifically focussed on freight transport, but it includes economic contributions to buying LNG commercial vehicles. Concerning freight, it is targeted to shippers (commercial activities, in particular retail and crafts).
Turin.02	**Van sharing**	The measure concerns the availability and use of a fleet of clean vehicles shared by shops. It has the aim of reducing own account transport.
Turin.03	**Rationalization of goods distribution in the urban area / Recognition scheme**	The measure defines the general objective of improving urban freight transport. The SUMP does not specify the measure in operational terms. In our opinion the Recognition Scheme developed in the city can be considered the most significant application of the measure. In particular the Scheme represents a policy agreement between the City and businesses to: - Introduce a recognition scheme of logistics platforms and vehicles according to their efficiency. - Rule the access to the LTZ based on a set of criteria which award recognised vehicles / platforms (e.g. concerning preferential time windows, loading/unloading and transit). - Introduce economic incentives for green fleets.

Source: Steer Davies Gleave's elaboration on "Comune di Torino, Piano Urbano della Mobilità Sostenibile, 2010"

5.1 A further experience which contributes to the SUMP's measure on the rationalization of goods distribution is reported in the following table.

[40] Source: Città di Torino, Piano Urbano della Mobilità Sostenibile – Linea di Indirizzo 3a, 2010 (http://www.comune.torino.it/geoportale/pums/cms/images/files/misure/ALL3_schede_misura3.pdf)

Table 16: Further measure application in Turin

ID	Measure	Description
Turin.04	**Mobile depot**	The measure concerns a mobile distribution platform (a trailer) in the city centre from which cargo bikes delivers goods. The mobile depot is of TNT and the bike operator is PonyZero. The depot allows to optimise deliveries to the specific central area concerned and increase the operational time of the cargo bikes.

Source: Steer Davies Gleave's elaboration on https://www.tnt.com/express/it_it/site/home/Chi-e-TNT/Media-Relation/Comunicati-stampa/Mobile-Depot.html#

3.7. Utrecht (The Netherlands)

UTRECHT CONTEXT

Utrecht is the fourth largest city in The Netherlands, with a population of about 330,000 inhabitants and it is the capital of Utrecht Province.

It is a central commercial and transport node at the junction of major roads and railways (with largest station in the country). At European level, the city is part of three Core Corridors of the TEN-T Network: the North Sea-Baltic, the Rhine-Alpine and the North Sea-Mediterranean. In addition to its importance as European railway node, it has a central position in the waterway network.

ABSTRACT OF THE MOBILITY AND LOGISTICS PLANS

We analysed two documents:

- Gemeente Utrecht, Utrecht Attractive and Accessible: Smart Routes, Smart Management, Smart Urban Planning – A SUMP for Utrecht, 2015[41];
- City of Utrech, Taking a more sustainable approach to freight, 2013[42].

The first document presents the goals of Utrecht SUMP. In particular the Plan focuses on 3 core areas:

- Smart Routes;
- Smart Management;
- Smart Urban Planning.

Freight transport and logistics are included in the Plan, in particular within the areas of Smart Routes and Smart Management. The document does not include a detail of logistics measures, which are nevertheless explained in the second document that we have analysed.

The Plan also includes all the other topics which are to be found within a SUMP, among which walking, public transport, cycling, private car mobility, transport interchanges and spatial planning.

Utrecht's SUMP was finalist at the European SUMP award of the European Commission[43]

[41] Source: Gemeente Utrecht, Utrecht Attractive and Accessible Smart Routes, Smart Management, Smart Urban Planning – A SUMP for Utrecht, 2015 (http://www.cities-for-mobility.net/documents/WC%202016/Presentations/montag/Presentation_Lot_van_HOOIJDONK_Utrecht.pdf)

[42] Source: http://civitas.eu/content/utrecht

[43] Source: http://www.mobilityweek.eu/sump-award/

The second document that we analysed specifically focuses on urban logistics. The Plan wants to answer the issues of air pollution, accidents and better use of public infrastructure.

The Plan was developed within the CIVITAS MIMOSA EU project. It foresees a regulation (which was implemented) concerning the access to the city centre of vans and trucks (Low Emission Zone) and a system of incentives to foster the use of clean vehicles (e.g. in the form of exemptions and time of delivery). Additionally it is complemented by further logistics measures.

For each of the measures the document highlights the results of the measures implementation and it indicates the overall budget committed (€ 23 million).

POSITIONING VERSUS THE SULP CONCEPT

According to the classification that we proposed, Utrecht presents a Mobility Plan drafted according to the SUMP guidelines. The Plan includes logistics.

Moreover as part of the CIVITAS project and consistently with the Mobility Plan, the City has developed a Logistics Action Plan. This Plan is not labelled as a SULP. Nevertheless the city shows a high level of awareness and it has several actions concerning urban freight.

In particular, as reported in the document published within the TURBLOG EU project[44], the commitment to create an efficient and effective framework for logistics in the city of Utrecht has a long history. Moreover, in 2011 Utrecht won the CIVITAS Technical Award and was the best CIVITAS City for its sustainable approach of Freight Traffic.

Taken into consideration the multiplicity of measures and the fact that they are organised within a local policy framework, the Logistics Action Plan was classified as a Logistics Plan.

PLAN GOVERNANCE AND PROCESS INCLUDING EVENTUAL RELATIONS TO THE SUMP

A participatory approach was adopted in both the planning documents.

In particular the SUMP was developed according to a participatory process, consistently with the SUMP guidelines.

Concerning the Logistics Plan, the measures were discussed and designed with stakeholders in several meetings between 2014 and 2015. A participatory process took place both with the Regional Government and businesses.

OVERVIEW OF THE MAIN URBAN LOGISTICS MEASURES

With specific reference to the Logistics Plan, the following table reports the main measures:

[44] Source: Turblog, Deliverable 3.2 Urban Logistics Practices – Case Study of the City of Utrecht, 2011 (http://www.inovamais.pt/turblog/dissemination/TURBLOG_D3.2UtrechtFV.pdf)

Table 17: Urban logistics measures in Utrecht Logistics Plan

ID	Measure	Description
Utrecht.01	**Flexible access for cleaner freight traffic**	The measure includes operative and regulatory actions: - The introduction of an electric mini-train (Cargohopper) with a capacity of five to eight vans for last mile deliveries from an Urban Distribution Centre[45]. - The increased access to restricted areas for clean and quiet vehicles, including night access.
Utrecht.02	**City distribution by boat**	The measure fosters river transport for urban distribution to reduce emissions and improve accessibility. In particular an electric vessel (the Beer Boat, whose name stems from its historic purpose) delivers goods to shops, bars and restaurants in the city centre. A second "multipurpose" vessel (Eco-boat) was also introduced.[46]
Utrecht.03	**Merchandise pick up points**	The measure concerns an "assembly point" for goods, located just outside the city centre, where shoppers can collect their goods at any time. The measure also plans that the point could be used as distribution point, where transport operators can drop goods and a local distributor provides last mile deliveries[47].
Utrecht.04	**Construction logistics plan**	The measure is related to the reconstruction of the railway station and in particular it concerns the development of a construction logistics plan to prevent traffic jams and inconveniences for people living near the construction site and near the construction traffic routes. Logistics optimisation should also be part of the contracts with construction firms.
Utrecht.05	**Distribution centres for bundling fresh and perishable food**	The measure concerns the development of a distribution centre for supplying catering businesses. The measure strongly relies on the involvement of business operators, also considering the specific requirements that fresh food have.[48]

Source: Steer Davies Gleave's elaboration on "City of Utrecht, Taking a more sustainable approach to freight, 2013"

3.8. Almada (Portugal)

ALMADA CONTEXT

The city is located on the South bank of the Tejo river. It is one of the 18 Municipalities of the Lisbon Municipal Area and it has about 160,000 inhabitants. It is right in front of Lisbon and part of the TEN-T Network Atlantic Core Corridor.

The urban area forms a sort of peninsula and it is not precisely circumscribed. Almada is mainly composed by three areas: 1) the city in the northern part of the peninsula, 2) Costa de Caparica, the seaside and the 13km long beaches, 3) the central area of Almada.

[45] Results show 88,332 kilometres saved by diesel vans or light trucks and a significant reduction of emissions (5.8 tonnes of CO2, 0.005 tonnes NOx and 0.001 tonnes PM10). Noise reduction was also achieved.

[46] Results show immediate positive effects on air quality (38 tonnes of CO2, 31 kg of NOx and 6 kg of PM10 emissions were saved during CIVITAS), noise, safety and overall liveability in the city centre.

[47] The Logistics Plan indicates that results were not encouraging due to the need of a change in behaviour of consumers and retailers.

[48] The analysed document indicates that the measure was planned but not implemented.

ABSTRACT OF THE LOGISTICS PLAN

The document that we analysed is the SULP published within the Enclose project[49].

The Plan presents a comprehensive approach to logistics planning. In particular it is structured in the following parts:

1. An overall presentation of Almada context, including: mobility and traffic figures, transport energy footprint, infrastructures and mobility system characteristics. This part is functional to give an overview of the mobility situation addressed by the SULP.
2. A focus on the logistics context of the city, including: the main logistics flows (traffic counts by vehicles categories and routes), the current logistics regulation (circulation, access and parking), the current main types of deliveries.
3. A focus on commercial activities. In particular, based on surveys to 700 shops, the Plan identifies and quantifies: types of shops and related commercial structure, types of transport units used, transport organisation, types of vehicles, delivery frequencies and timeframe. Interviews to logistics operators were also carried out.

The first part of the Plan has the aim to highlight the logistics problems of the city, which are:

- the lack of loading – unloading areas and of related signalling and control of reserved spaces;
- the lack of knowledge of regulations by transport operators;
- the significant traffics generated by two supermarkets in the city centre;
- self-supply of shops, which is not optimised;
- the traffic situation around the fish and vegetables market.

The Plan continues with:

4. Proposals of candidate measures.
5. The selection and analysis of the feasibility of the measures.
6. The prioritization of the measures.
7. The communication and promotion of the SULP.
8. The road map to the SULP adoption.
9. A set of indicators with baseline and target values.

POSITIONING VERSUS THE SULP CONCEPT

The analysed document is a SULP, developed according to the application of the SUMP guidelines to city logistics.

PLAN GOVERNANCE AND PROCESS INCLUDING EVENTUAL RELATIONS TO THE SUMP

The SULP document development has been a progressive process: it has been drafted by Almada Municipality and improved before producing the final version by suggestions coming from stakeholder consultations.

The SULP process is meant to be a direct contribution to the city SUMP process, by taking the ELITS guidelines and applying them to logistics planning.

[49] MemEx, ENCLOSE project - SULP Portfolio, 2016

OVERVIEW OF THE MAIN URBAN LOGISTICS MEASURES

The following table reports the main measures of the SULP.

Table 18: Urban logistics measures in Almada SULP

ID	Measure	Description
Almada.01	**Urban Consolidation Centre (UCC)**	The measure plans the development of a warehouse and of an external area situated in a parking area right outside the city and close to the junction connecting the city with the main access roads. The warehouse is used to consolidate goods and to serve last mile deliveries with eco-sustainable commercial vehicles. The UCC measure is combined with regulatory measures to access the city centre. An IT system for the UCC operations is also planned. It is foreseen a public management in the start-up phase, while in a second phase a PPP or a service-procurement is envisaged.
Almada.02	**Pick-up Point (PuP)**	The measure foresees a fenced and protected / controlled freight area where people can pick up deliveries. The area is planned in a parking building in the city centre (in the premises of a bus depot to reduce the investment, and near the fish market). The measure has the aim of responding to the growing trend of B2C e-commerce and it is a further delivery point for buyers.
Almada.03	**Market area services**	The area around the market is highly congested. Both businesses and clients have transport problems. This measure aims at reorganising the parking spaces of the market area and at developing the supporting loading and unloading regulation to improve the mobility of the area and the city space.
Almada.04	**Extension of the parking and logistics regulation**	The measure focuses on the transport regulation of a specific city neighbourhood, which does not currently address logistics issues and which does not define loading/unloading areas. A revision of the regulation is planned, also with the aim of extending it to other areas of the city. In particular the regulation should focus on: loading/unloading time windows and areas, access restrictions, signing. The measure includes enforcement actions.

Source: Steer Davies Gleave's elaboration on "MemEx, ENCLOSE project - SULP Portfolio, 2016"

3.9. Burgos (Spain)

BURGOS CONTEXT

Burgos is a medium-size city of about 180,000 inhabitants in the North-central part of Spain. The city is an important commercial and touristic centre, known worldwide for its artistic heritage which includes 3 Human Heritage sites.

The presence of the river, of a historic city centre and the orography of the city (three levels on 75 metres) make the mobility and logistics situation complex.

Burgos is located on the route from the central part of Spain and the Bask countries to France and it is included in the TEN-T Network Atlantic Core Corridor.

ABSTRACT OF THE LOGISTICS PLAN

The document that we analysed is the SULP published within the Enclose project[50].

It follows the same methodological approach of the Almada SULP, including:

1. An overall presentation of the city context.

[50] MemEx, ENCLOSE project - SULP Portfolio, 2016.

2. A focus on the logistics situation, including regulatory, services and infrastructures issues and the strategic guidelines for the SULP development.
3. An analysis of the logistics demand and supply.

The main critical issues identified are:

- the lack of a strategic social, economic and environment approach in facing logistics issues, which are currently managed on a purely regulatory perspective;
- the insufficient involvement of stakeholders;
- the lack of intermodal facilities servicing the city;
- the low promotion of logistics in the touristic city centre;
- the lack of energy efficient logistics activities;
- the specific logistics situation of the city market, which is congested and un-optimised.

The plan continues with:

4. An overview of the logistics measures proposed, including their analysis.
5. The design of the logistics solutions.
6. The prioritization of the measures.
7. A set of indicators with baseline values.
8. The road map to the SULP adoption.
9. The promotion and communication activities of the SULP.

The main strategic priorities of the Plan are:

- using Information Technology for logistics management (Smart city approach);
- developing and optimizing shared logistics infrastructures, services and resources;
- greening the urban logistics system;
- promoting intermodality and the coordination and integration of logistics.

POSITIONING VERSUS THE SULP CONCEPT

The analysed document is a SULP, developed according to the application of the SUMP guidelines to city logistics.

As in the case of Almada, the SULP has the aim of applying the SUMP ELTIS guidelines to logistics and to directly contribute to the SUMP process.

PLAN GOVERNANCE AND PROCESS INCLUDING EVENTUAL RELATIONS TO THE SUMP

The SULP document development has been a progressive process. In particular the same Plan included and foresaw participatory processes with stakeholders to validate and consolidate the Plan.

The main activities reported in the Plan are:

- information and training about the SULP;
- consultation and debate with stakeholders;
- shared decisions with stakeholders.

A Committee including all the main stakeholders will implement and monitor the Plan.

OVERVIEW OF THE MAIN URBAN LOGISTICS MEASURES

The following table reports the main measures of the SULP:

Table 19: Urban logistics measures in Burgos SULP

ID	Measure	Description
Burgos.01	**Urban Consolidation Centre (UCC)**	The measure foresees a physical infrastructure for goods consolidation. It plans to use the old railways station to minimize investment costs. A regulatory scheme accompanies the UCC operations. The UCC is planned to be served by electric vehicles.
Burgos.02	**Re-urbanization of the market area**	The infrastructural measure concerns the market area structural refurbishment and renovation, including: indoor parking to reduce congestion around the building, a floor dedicated to freight vehicles, re-organising public space around the building with reference to loading-unloading areas and parking, redefining time widows rules in the area.
Burgos.03	**Eco-van sharing for city centre shop owners**	The measure aims at creating a shared logistics service for shops to reduce CO_2 emissions and traffic congestion. The van-sharing depot/parking area should stay within the UCC. In the initial stage the fleet should consist in one electric vehicle. A web system should allow the booking of the van.
Burgos.04	**Web-management for the non-labelled cars card system**	The measure focuses on an IT system to: - manage permissions for loading and unloading of those operators which are not labelled according to the City urban freight regulations; - support UCC logistics operations.
Burgos.05	**Last mile service for the city centre: Park&Buy by bike**	The measure foresees that people shopping in the city centre can have purchased items delivered to a parking area or hotel by cargo bikes and the creation of a Bike Logistics Agency within the UCC. The core actors involved are the Agency, shops, customers, the parking manager or hotel.

Source: Steer Davies Gleave's elaboration on "MemEx, ENCLOSE project - SULP Portfolio, 2016"

3.10. Stockholm (Sweden)

STOCKHOLM CONTEXT

The city of Stockholm has about 900.000 inhabitants; the population of the metropolitan area is about 2.2 million.

Stockholm is located on Sweden's south-central east coast, where the third largest lake of the country flows out into the Baltic Sea. The central parts of the city consist of fourteen islands that are part of the Stockholm archipelago. Over 30% of the city area includes waterways and another 30% parks and green spaces.

The city is part of a region with a service-based economy, highly dependent on imported goods.

The city is a central node in the Baltic Sea and part of the Scandinavian-Mediterranean TEN-T Core Network Corridor.

ABSTRACT OF THE MOBILITY AND LOGISTICS PLAN

The 2 documents that we analysed are:

- City of Stockholm, Urban Mobility Strategy, 2012
- Stockholm Stad, The Stockholm Freight Plan 2014–2017, 2014

The first document identifies the city mobility vision at 2030, which focuses on:

- the main network strategy;
- road safety;
- cycling;
- parking;
- freight traffic;
- walking;
- traffic and the environment.

Other programmes and strategies which are relevant to the environmental impact of freight transport are the Stockholm Environmental Programme 2012–2015, the Roadmap for a Fossil-Fuel-Free Stockholm 2050 and the Strategy for Clean Vehicles and Renewable Fuels. The Plans takes into consideration relations to these strategies.

Urban freight is included in the Plan and in particular it recognised that goods transport is vital for the city's functioning. More in detail, from a strategic point of view the issue of freight is treated in terms of:

- space needs for loading and unloading;
- a change in the perspective: shifting from addressing freight traffic to addressing goods' needs;
- capacity of the mobility system to answer a increasing quantity of goods, also by means of increased load factors.

With reference to the overall strategic approach of the document, it identifies different mobility planning aims (Capacity, Accessibility, Attractiveness and Sustainability) and a related action plan for mobility.

More in detail, the reference to freight concerns:

- infrastructure capacity for goods;
- inland navigation for freight transport;
- dangerous good transport;
- collaboration between the City, the freight industry, shippers and vehicles manufactures to make freight sustainable and efficient (as well as measuring its efficiency);
- integrating freight needs into urban planning.

The Plan explicitly foresees the development of an Action Plan for freight traffic (Measure 12), which is the second document that we have analysed, as hereafter reported.

The Logistics Plan (The Stockholm Freight Plan 2014–2017) indicates that an increase in freight deliveries is expected due to the city's growth. For this reason, to ensure safe, clean, efficient and reliable deliveries and avoid traffic, changes are needed to enable more efficient solutions in the existing transport system.

The Logistics Plan has the following overarching goals:

1. Enabling more reliable delivery times. The City aims to enable more reliable freight delivery times and ensure that vehicles reach their end customers on time. The principle is that the less time a vehicle spends waiting in traffic or searching for a loading zone, the less negative impact it will have on the traffic flows and the environment.
2. Facilitating commercial freight vehicles operations. By improving access to efficient loading zones, the City aims at streamlining and expediting commercial freight deliveries. The goal is to shorten

driving distances and driving times, as well as a better accessibility for more freight traffic and a safer and more attractive street environment.

3. Promoting the use of clean vehicles. By establishing environmental standards for freight delivery vehicles the City wants to promote the use of clean vehicles.
4. Advancing the freight delivery partnership between the City and other stakeholders.

Each goal is associated with qualitative and quantitative performance indicators, which will be monitored during the action plan implementation.

POSITIONING VERSUS THE SULP CONCEPT

According to the classification that we proposed, Stockholm has both a Mobility Plan with logistics measure and a Logistics Plan.

Freight transport is fully embedded into mobility policies and it finds a specific policy document in which it is addressed, independently of the fact that the analysed planning documents are not labelled as SUMP and SULP.

PLAN GOVERNANCE AND PROCESS INCLUDING EVENTUAL RELATIONS TO THE SUMP

The city shows a clear awareness on the need to collaborate with local stakeholders in the implementation of the policy measures, both in terms collaboration with businesses and with other departments of the city in a cross sectorial perspective. This makes the Mobility Plan very near to the SUMP concept, though it is not labelled as such. The same applies to the Logistics Plan.

Governance and a participatory processes in the Plan implementation are an explicit measure of the same Logistics plan, in terms of:

- Collaboration with the numerous stakeholders operating in the supply chain, which can provide efficient and effective solutions that can be transferred at the policy level to solve logistics issues.
- Closer co-operation of the city with these stakeholders, which can establish a shared vision, clarify respective roles and implement tangible projects.

In particular the City indicates that the time, knowledge, experience and financial resources of the wider stakeholders' community are needed, as prerequisite for efficient commercial freight traffic. Therefore the Plan indicates that stakeholders should contribute not only in terms of consensus building, but in terms of financial partnership to implement the Plan.

OVERVIEW OF THE MAIN URBAN LOGISTICS MEASURES

The following table includes the logistics measures of the Stockholm Freight Plan 2014–2017

Table 20: Urban logistics measures in Stockholm Logistics Plan

ID	Measure	Description
Stockholm.01	**Conduct a freight consolidation project**	The measure concerns a freight consolidation centre with a freight reception. Freight will be bundled according to city destinations, served by electric vehicles. The City plans to conduct a pilot project in partnership with property owners, tenants, distributors, academic institutions and freight operators.
Stockholm.02	**Conduct an off-peak delivery project**	The measure promotes deliveries during evening or night while taking into account noise limitations. The purpose is to reduce deliveries during the busiest day hours and increase commercial traffics speed.

ID	Measure	Description
Stockholm.03	**Commercial freight traffic operated in public transport lanes**	The measure wants to study whether freight traffic can be operated in public transport lanes and whether new combined public transport and freight lanes can be created on some of the city's enter and exit roads. The project will be implemented in cooperation with the Transport Administration of Stockholm County Council and commercial freight drivers.
Stockholm.04	**Increase the number of loading zones for heavy vehicles**	The measure foresees the construction of loading zones for HGV and an enforcement system to avoid other vehicles using the zones. The City plans to collaborate with civil enforcement officers and freight drivers to identify loading zones.
Stockholm.05	**Review lay-bys for heavy vehicles and their trailers in the outer districts.**	Commercial freight drivers have reported a need for more lay-bys in the outer districts where heavy vehicles and their trailers can be parked. The measure focuses on the collaboration between the City, freight drivers and the police to evaluate the situation by reviewing existing lay-bys.
Stockholm.06	**Conduct a technical project that involves loading zone sensors**	The measures plans to study the feasibility of a pilot project on sensors that indicate the availability of freight loading zones to commercial freight drivers to reduce both driving distances and driving times. The City will analyse whether this can result in a booking system that allows drivers to reserve loading zone slots.
Stockholm.07	**Review existing regulations for commercial freight traffic**	The measure concerns the plan to evaluate how the City regulations can support a better freight traffic in the City. In particular it wants to facilitate more efficient commercial freight traffic and to minimise its impact on accessibility for other road users and the general public.

Source: Steer Davies Gleave's elaboration on "Stockholm Stad, The Stockholm Freight Plan 2014–2017, 2014"

D. Analysis of low carbon logistics measures

1. Introduction

This Section focuses on the analysis of selected low urban carbon logistics measures.

As indicated in the methodological Section of this report, we have mapped urban logistics measures in 32 European cities[51]. These cities were selected based on a criterion of geographic coverage at European level and on our knowledge of city cases which presented measures which could be of interest to the SULPiTER FUAs.

The 32 cities are reported in the following table.

Table 21: The panel of the cities for the low carbon urban logistics measures analysis

Country	Cities
Austria	Vienna
Belgium	Ghent, Brussels
Bulgaria	Burgas, Balchik
Croatia	Zagreb
Czech Republic	Brno
Denmark	Aalborg
Finland	Helsinki
France	Toulouse, Lyon, Paris
Germany	Bremen, Berlin
Greece	Serres
Hungary	Pécs
Italy	Turin, Lucca
The Netherlands	s'Hertogenbosch, Utrecht, Amsterdam
Norway	Trondheim
Poland	Kraków
Portugal	Almada
Romania	Alba Giulia
Spain	Burgos, Barcelona
Sweden	Malmö, Stockholm
United Kingdom	Dundee, Norwich, London

Source: Steer Davies Gleave's elaboration

We identified 158 logistics measures in these cities. All the measures that we mapped are reported in Appendix A. The Appendix is a tool for the SULPiTER partners to learn about the main measures in Europe and it includes reference to the sources where further technical materials can be found.

Then, we selected 58 measures which in our opinion could be of interest of the project partners. The measures were grouped into 18 homogenous categories.

[51] The 32 cities include the 10 cities in which mobility and logistics plans were analysed.

Finally we selected the final list of 12 types of measures to analyse. The ratio of the selection is reported in methodological Section of this report.

The scope of this work is to inform and give to the SULPiTER partner authorities technical inputs concerning measures that could be included in their SULPs. The scope is not a comprehensive mapping and categorization of logistics measures throughout Europe.

For each of the 12 selected measures types, we carried out a detailed analysis including:

- Short description of the measure.
- Category of the measure type, considering that each measure type may relate to one or more of the following categories:
  - regulation;
  - technology;
  - infrastructures;
  - services;
  - industrial / economic;
  - urban planning;
  - energy.
- Scale of application and impact: City centre, Specific city areas in the FUA, overall City / FUA.
- Problems and obstacles in the development of the measure type.
- Investment and operational costs.
- Benefits.
- Examples of application, both in the UE and US.

The 12 types of measures which are described in the next chapter are:

1. Off-street loading bays;
2. Cargo bikes;
3. Clean fuels / vehicles mobility scheme;
4. Spatial planning for logistics;
5. Freight routes;
6. Truck tolling / charging;
7. Delivery and servicing plans;
8. Mobile depots;
9. Off-peak deliveries;
10. By boat logistics;
11. Urban Distribution Centres;
12. Coordination of urban freight rules in the city.

Finally the types of measures were benchmarked in terms of:

- the category of measures type;
- the territorial level of applicability;
- the investment and operational costs.

2. Measures types detailed description

2.1. Off street loading bays

The measure type focuses on developing loading and unloading areas which are located outside the street space. The objective is to make public spaces less congested and more liveable. The measure is in principle applicable both to a group of shippers (shared bays by different nearby shops) or to single shippers which have frequent or significant quantities of deliveries (e.g. supermarkets, big retailers). The type of measure can be the result of private agreements among businesses, the initiative of a single business, or part of a regulatory intervention of planning authorities (in the latter case by public provisions to include such bays in real estate projects).

Category	Scale of application
Regulation – Urban planning – Infrastructure	City centre, Specific city are in the FUA and City / FUA

PROBLEMS AND OBSTACLES IN THE DEVELOPMENT OF THE MEASURE TYPE

It may be difficult to implement the measure in urban areas which are already very dense, as the measure needs the identification of available areas.

Loading and unloading activities can create noise to neighbouring residents.

It needs a strict internal dialogue within the promoting authority, to integrate a transport measure within urban development policies.

It may difficult to apply it in absence of real estate projects.

Small shops may not be interested in using own spaces for loading and unloading, unless incentives or some type of regulatory intervention fosters them to do it.

INVESTMENT AND OPERATIONAL COSTS OF THE MEASURE TYPE

From a public point of view there are not specific costs related to this measure because it has a regulatory and planning nature. From a private point of view there is a cost in reserving land for loading and unloading and in building the bays.

BENEFITS OF THE MEASURE TYPE

De-congesting and reducing the use of street space and consequently improve the quality of public spaces.

Make loading and unloading activities more efficient for businesses.

EXAMPLES OF APPLICATION

City	Description
Vienna	In the Urban Mobility Plan Step 2025 the City of Vienna envisages the construction of joint loading yards through private-law agreements when the new urban development areas are developed.
Paris	In the urban local plan of 2006 the City of Paris has decided to impose to stores of at least 500 square metres, offices of 2500 square metres and hotels with minimum 150 rooms to build spaces dedicated to their freight activities.

2.2. Cargo Bikes

This measure type is much diffused in Europe and it is a 100% carbon free and low cost intervention aimed at facing urban freight congestion. Cargo bikes can be used for light deliveries (up to 250 kg) and short distances. Hence, they are ideal for deliveries in city centres or small parts of urban areas. The measure implementation is usually associated (and sometime an answer) to Authorities' regulatory measures in specific city areas, where vehicles access is regulated or banned. Another element favouring the diffusion of the measure is the presence of a cycling infrastructure. The measure is also associated to other measures, such as Urban Distribution Centres or mobile depots. The vehicle types include bikes and tricycles and combinations with trailers for different cargo weights and volumes[52]. It is suitable to different supply chains (e.g. parcel, food). The scope of applications of such type of measure becomes even broader when combined with electric drives.

Category	Scale of application
Regulation - Services	City centre and Specific city areas in the FUA

PROBLEMS AND OBSTACLES IN THE DEVELOPMENT OF THE MEASURE TYPE

The measure type has not big obstacles to implementation; on the other hand it covers just a (small) part of urban deliveries in a metropolitan context, due to distance range and goods weight limitations[53].

It requires a logistics facility from which bicycles can run their last mile delivery (e.g. space for a mobile depot or for a micro-consolidation centre).

Regulatory measures to access city centre or specific city areas are a determining factor to foster the diffusion of the measure.

Cycling infrastructure is also an important element for the measure's diffusion.

INVESTMENT AND OPERATIONAL COSTS OF THE MEASURE TYPE

The costs to implement such measure are quite limited. Concerning operational costs it mainly needs staff and maintenance costs. Concerning investment costs it needs cargo bikes. Further investment costs concerning a consolidation platform and an IT system to manage deliveries are needed in case the measure does not serve an existing platform.

[52] Freight bikes are also getting more popular for private use.

[53] Yet, according to a study by cyclelogistics.eu, it seems possible that bike deliveries could cover about 50% of the total deliveries (source: http://www.cyclelogistics.eu/docs/111/CycleLogistics_Baseline_Study_external.pdf)

The amount of the investment and operational costs depends on the scale of the services. Municipalities aiming at implement such measure could also co-fund the purchase of cargo bikes.

The cost of a cargo bike may indicatively vary from € 1,000 to € 5,000 according to the type of product and its characteristics (bicycle, tricycle, electric assisted cycle, etc.). An example from the city of Lucca (Italy)[54] indicates an investment of € 30,000 to purchase 24 cargo bikes and € 60,000 for the cargo bike stations and the ICT management system.

BENEFITS OF THE MEASURE TYPE

Cargo bikes bring environmental savings and noise reduction. For example in Turin (Italy) it was estimated an emissions reduction of 250 grams of CO_2 per Km[55].

There are cost benefits for businesses due to lower purchase prices and maintenance costs compared to other transport means such as vans.

Cargo bikes can improve the image of a city and of logistics businesses.

Logistics business can have access to city areas where, due to regulations, vans do not have access.

In specific city conditions (e.g. narrow streets) access to delivery destinations may also be improved.

EXAMPLES OF APPLICATION

City	Description
Vienna	In the Urban Mobility Plan Step 2025 adopted by the City Council in the very end of 2014, the City expresses the willingness to create favourable conditions to implement a cargo bikes system for last mile deliveries. The goal is to increase the share of bikes used in the small-scale transport of goods, especially in inner-urban and traffic-calmed areas. Vienna will create funding instruments for businesses which buy freight bikes and it will identify fields where freight bikes can be used in the context of municipal services. The target of the city is to have at least 20 freight bikes used by the City Administration by 2020.
Paris	Cargo Bikes were introduced in 2001 when La Petite Reine started operations introducing electrically assisted cargo tricycles. In 2009 the company's activities shifted from parcel distribution to home delivery from large stores. The electric assistance is non-polluting and completely adapted to an urban environment. It has a payload of up to 180 kg of goods and it has access to the bus lanes and to the bicycle lanes.
Lucca	The city of Lucca wants to implement a cargo bikes system for small deliveries by 2020. The system should integrate the fleet of existing environmental friendly vehicles. In addition, the system should help the development of services for point to point collection and distribution of goods in the historic centre. Using cargo bikes should finally also lead to a further development of the Luccaport Urban Consolidation Centre. The estimated environmental impacts are lower emissions by 9700 Kg of CO_2, 24 Kg of NOx + HC, 68 Kg of CO, 3 Kg of PM and energy savings of 43,000 kWh.

[54] Source: MemEx, ENCLOSE project - SULP Portfolio, 2016

[55] Source: https://www.tnt.com/express/it_it/site/home/Chi-e-TNT/Media-Relation/Comunicati-stampa/Mobile-Depot.html

City	Description
Turin	The private operator TNT in partnership with PonyZero has launched a cargo bike system in the end of 2015. Bikes have a total payload of 180 Kg. The solution is supported by a mobile depot located in a strategic position in the city centre. The project is a pilot and it aims at increasing the efficiency of deliveries and making them more sustainable. The promoters estimate a reduction in CO_2 emissions by about 12.6 tons/year.
Other cities	In Ghent (Belgium) freight bikes are already part of the car sharing system. In Graz (Austria) and Bucharest (Romania) freight bikes work at waste disposal.

2.3. Clean fuels / vehicles mobility scheme

The main objective of the measure is to foster sustainable and low carbon delivery services in both urban and metropolitan areas. This measure can find different types of applications.

Firstly, it can find application as system of regulations to access urban areas (Low Emission Zones) and of regulatory incentives for clean vehicles (e.g. easing access and use of loading and unloading areas to clean vehicles).

Secondly, the type of measures can be included in a local or wider regional system of subsidies to buy clean vehicles (this can concern specifically commercial fleets). It can also represent (further than a mobility measure) part of an energy and environmental policy or of an economic policy fostering industrial and service sectors related to clean mobility.

Finally this type of measure can concern the delivery of alternative fuels infrastructures (e.g. electric or LNG).

Category	Scale of application
Regulation - Infrastructure - Industrial/Economic - Energy	City centre and City / FUA

PROBLEMS AND OBSTACLES IN THE DEVELOPMENT OF THE MEASURE TYPE

Concerning the regulatory dimension of this type of measure (e.g. LEZ), there are not specific problems in the implementation, except the need of enforcing systems (which in most cases are already in place). Of course this impacts of the operations of logistics operators (and on their investments in green fleets) and a participatory process in the measure preparation may ease the measure acceptance (e.g. within a Freight Quality Partnership in which businesses and authorities cooperate).

In terms of subsidizing the procurement of green vehicles, there are not main obstacles, assuming the availability of budget.

Concerning the infrastructural dimension, the main issue is probably the building of business cases to ensure the sustainability of the investment.

INVESTMENT AND OPERATIONAL COSTS OF THE MEASURE TYPE

The investment and operational costs significantly differ based on the measure applications.

With reference to regulatory issues, there are low costs (both of investment and operation) in terms of public budget. There are investment costs for businesses which want to invest in green fleets. The

indicative cost of a commercial e-vehicle obviously varies depending on its characteristics. For example we can estimate the cost of an electric van at about € 20,000 – 25,000[56].

With reference to subsidizing the procurement of green vehicles, the cost is itself a policy decision, which is often adopted at a national level rather than at local level. Therefore the cost evaluation is difficult. We can estimate that the cost to generate impacts is higher than other types of measures analysed in this report.

From an infrastructures point of view, as mentioned above, the business case of the measure has different variables and depends on the geographic extent of the measure. The network development has higher costs than other measures analysed in this report.

BENEFITS OF THE MEASURE TYPE

Reductions in emissions and pollution are the main benefit of the measure. An example is reported by the Los Angeles case where trucks emissions were reduced by 80% in the Port areas in 2012. In case of electric mobility schemes, a further benefit is ensured by noise reductions.

Finally measures concerning subsidization of clean vehicles procurement have the benefit of up-taking the diffusion of clean mobility among freight operators.

EXAMPLES OF APPLICATION

City	Description
Vienna	The City already provides electric fleets in public transport services and it is trying to introduce electric mobility also in the freight transport, by offering grants to purchase commercial and servicing e-vehicles.[57]
Utrecht	The implementation of this measure concerned an environmental zone within the city centre based on:[58] - Time/vehicle restrictions: only vehicles with specific characteristics of weight and dimension can access the zone in specific time windows. Moreover only new generation vehicles that comply with specific emission standards (Euro 3 with restrictions, Euro 4 and above) can enter the city centre. - Dedicated freight areas for unloading so that commercial vehicles and other traffic flows are not in conflict in occupying public space and the traffic is more fluent.
Turin	The city fostered the adoption of methane fuelled vehicles for passenger and freight transport. The project stemmed from State contributions to purchasing hybrid vehicles and delivering charging stations. The main results were the purchase of 225 methane vehicles and 4 methane charging stations in the city[59].

[56] Sources: https://www.renault.it/veicoli/gamma-ze/kangoo-ze.html; https://www.nissan.it/gamma/veicoli-commerciali.html;

[57] Source: Vienna City Administration, Urban Mobility Plan Vienna, 2015 (measure 34, page 80)

[58] Source: MDS Transmodal Limited and Centro di ricerca per il trasporto e la logistica (CTL), DG MOVE Study of Urban Freight Transport – Final Report, 2012 (page 87)

[59] Source: Città di Torino, Piano Urbano della Mobilità Sostenibile – Linea di Indirizzo 3a, 2010 (page 89)

City	Description
Los Angeles	The Clean Truck Program is part of the Clean Air Condition Plan. The measure deals with the accessibility of trucks to the Ports of Los Angeles and Long Beach. In particular the regulatory approach foresaw a ban to access to the port areas to those heavy goods vehicles that do not meet the 2007 Federal Clean Truck Emission Standards.[60]
Different cities in UK	Different cities introduced Low Emission Zones covering selected city areas. No physical barriers are provided, but cameras record plate numbers and verify if they are in the database of registered authorized vehicles. This database contains all the vehicles that meet set emission standards.[61]

2.4. Spatial planning for logistics

The measure type focuses on identifying and "reserving" land for logistics purposes. It can concern the conversion of specific areas into logistics areas by changes of land-use destinations. The goal is to increase the efficiency of freight transport in the concerned territorial context. Different types of reserved land can answer to different logistics purposes. For example a small area could host an urban distribution centre; reserving areas along canals or in the proximity of railways could increase accessibility to multimodal transport solutions. The ratio of this of this type of measures is that the strategic allocation of logistics areas within Functional Urban Areas can affect modal choices, also in a wider regional and inter-regional perspective.

Category	Scale of application
Urban planning – Infrastructures	City / FUA

PROBLEMS AND OBSTACLES IN THE DEVELOPMENT OF THE MEASURE TYPE

The allocation of logistics areas within a territorial context is a complex activity. The issue deals with the foresight of urban and logistics development that will influence the successful strategic positioning of a cost-effective logistics area. This has to also consider a wider perspective than the administrative boundaries in which the city acts.

Space scarcity can be an obstacle.

With reference to areas for modal shift, there is an issue with the presence of transport demand suitable for modal shift.

INVESTMENT AND OPERATIONAL COSTS OF THE MEASURE TYPE

From a public perspective the investment and operational costs of the measure are low (this is a planning measure).

In terms of subsequent investments and operational costs for developing and running logistics facilities, that depends on multiple factors and on private investments. From a public perspective, a further investment cost to be considered concerns the accessibility to the logistics areas and the related infrastructural works.

[60] Source: https://www.portoflosangeles.org/ctp/idx_ctp.asp

[61] Source: https://www.sintef.no/contentassets/067ef756b7644281ad2514bef7955c53/gbo/gbo-l-2.1-state-of-the-art-report--urban-logistics-practices_l.pdf (London case, page 22)

BENEFITS OF THE MEASURE TYPE

A strategic allocation of logistics areas should improve logistics efficiency.

A rational and systemic allocation of logistics areas allows developing economies of scale in the logistics activities, avoiding logistics sprawl.

The measure also fosters multimodal transport and brings environmental benefits. These benefits can concern both the specific FUA concerned and the wider regional and inter-regional level, because multimodal transport services take place on longer distances.

EXAMPLES OF APPLICATION

City	Description
Brussels	The city case analyses and selects lands for logistics purposes on the basis of their position on waterway and railway axes to foster these modes of transports and overcome congestion in the road network. The implementation of the measure aims at developing synergies with the Flanders and Wallonia neighbouring regions. The aim is improving the freight delivery network on a not only at the city, but also at the inter-regional level.[62]
Paris	The measure is included within the *Plan Local d'Urbanism* and it identifies land to be used for logistics purposes accessible from road, rail and waterways[63]. In particular the measure wants to boost the role of logistics terminals within a complex transport system.[64]
Toronto	The measure concerns the drafting of Guidelines for the coordination of land use and freight planning. In particular spatial planning is part of a more structured process in which freight movements are analysed to identify an efficient logistics network that includes main corridors for freight vehicles. The plan delivers different solutions and regulations that allow the complete integration between transportation and land use planning.[65]

2.5. Freight routes

This measure focuses on regulating freight vehicles routes. The measure is part of authorities' traffic regulatory actions to limit traffic conflicts between cars and freight vehicles. The main objective is improving the efficiency of freight deliveries by providing routes and signage for freight vehicles to access transport nodes and industrial areas. This allows increasing commercial (and private) vehicles average speed and reducing congestion. A possible further development of the type of measure concerns IT applications for real time routing of vehicles, with a wider smart city perspective.

Category	Scale of application
Regulation – Technology	City / FUA

[62] Source : Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013 (page 34-50).

[63] Source: Île-de-France & STIF, Plan de déplacements urbains d'Île-de-France, 2015

[64] An interesting analysis of the issue is presented in: Laetitia Dablanc, University of Paris-Est, Three Paris Master Plans, where does freight fit in, 2015

[65] Source: http://www.mto.gov.on.ca/english/publications/pdfs/freight-supportive-guidelines-english.pdf

PROBLEMS AND OBSTACLES IN THE DEVELOPMENT OF THE MEASURE TYPE

The transport network of a city and the location of industrial and logistics areas play a fundamental role in the success of the measure, as they determine the freight mobility patterns and eventual conflicts with private mobility.

Further than ruling the routing, authorities must put in place a reliable *wayfinding* system (including up-to-date and reliable information) to put drivers in the conditions to comply with the regulatory framework.

INVESTMENT AND OPERATIONAL COSTS OF THE MEASURE TYPE

From a public perspective, there are not major investment costs related to this measure, except than signing (higher costs are expected in case of dynamic – IT systems). From an operational point of view, enforcement should be ensured and adequate information on the measure provided in its start-up phase.

From a business perspective the measure should in principle reduce costs thanks to an average higher vehicles' speed. This benefit may be partly reduced in case of longer journeys to access destinations. There are not investment costs for transport providers.

BENEFITS OF THE MEASURE TYPE

The measure allows avoidance of traffics conflicts between freight transport and private mobility.

It increases average speed for both categories and it reduces emissions due to lower congestion.

It fosters road safety.

It assists transport operators in reaching more easily their destinations.

EXAMPLES OF APPLICATION

City	Description
Brussels	The idea to define freight routes for heavy goods vehicles has been conceived since 2003, when routes for dozen areas were proposed by directional signage. The freight plan published in 2013 proposes the following measures[66]: • to improve road signs from the Grand Ring to the main industrial and commercial concentrations; • to accompany municipalities wishing to implement local access restrictions; • to implement efficient communication for carriers; • to look for funding to develop a dynamic assisted navigation system; • to develop an inventory of navigation systems currently in circulation on the market or already used in other cities; • to assess the viability of introducing a binding regional regulation system on routes to logistics and industrial destinations.
Amsterdam	The city has developed the *Voorkeursnet Goederenvervoer*: a selective network of preferential routes that freight carriers can use in a flexible and safe manner to reach their destinations. Such routes allow a reduction of freight transport environmental impact (air pollution and noise).[67]

[66] Source: Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013

[67] Source: https://www.amsterdam.nl/parkeren-verkeer/luchtkwaliteit/slim-schoon-stad/voorkeursnet/

City	Description
Toulouse	The measure focuses on developing a "rail and road" circulation scheme. Concerning road, it concerns routing freight vehicles, in particular in terms of access to main commercial and urban areas. With reference to rail, all main rail lines go through the urban centre and the city wants to develop a plan to reduce the related impacts.[68]
Atlanta	The Atlanta strategic truck route master plan[69] designs a truck route system to provide regional access for freight transport. The network was conceived with corridors moving along the East-West and the North-South axes with the purpose of creating a grid of appropriate routes. The plan also aims at developing strategies to support the efficient movement of truck traffics without disproportionately impacting existing communities, the environment, or the transportation network. The project was developed over four steps: Collect and analyse data on current freight routes. Develop the specific route network into a grid system. In this phase recommendations from stakeholders were collected. Identify best practices to guide future access management policies. Identify and evaluate projects to enhance the utilization of existing roadways as designated within the truck route plan.
New York	One of the greatest challenges in addressing truck traffic in NYC is the region's dependence on truck traffic (99% of the goods delivered by trucks). The New York City Truck Route Management and Community Impact Reduction Study[70] was targeted at the following objectives which are relevant to the freight route measure type: • ensuring that trucks do not inappropriately utilize residential streets; • reducing traffic congestion. The recommendations of the Study include truck routes and signage, with changes in routes, improvement of signage, compliance enhancement and regulations awareness increase.

2.6. Truck tolling / charging

The measure aims at applying tolling / charging[71] schemes to freight vehicles on certain territorial areas. Tolls and charges can be levied according to the distance travelled, the type of vehicle (e.g. truck load, emission class) or they can be time based. They must comply with the provisions of the European Commission Eurovignette Directive[72].

Different types of tolling are possible:

- Vignette (time based windshield sticker).
- Tag and Beacon (electronic chip card in windshield or gantries, with readers).
- GPS and On Board Units (OBUs).

This type of measure is part of authorities' statutory powers and it is usually applied at the national level (according to the objectives and the technology adopted, each country has its own rules compliant with the European Directive). However, its applicability at the urban level in coordination within a wider territorial area is an option (e.g. Wien and Brussels have plans to apply it).

[68] Sourse: Tisséo - Syndicat Mixte des Transports en Commun de l'Agglomération Toulousaine, PDU - Plan de Déplacements Urbains de la grande agglomération toulousaine, 2012

[69] Source: ASTRoMaP (Atlanta Strategic Truck Route Master Plan) - Executive Summary published by Wilbur Smith Associates

[70] Source: http://www.nyc.gov/html/dot/downloads/pdf/execsum.pdf

[71] The main difference between tolling and charging is that tolling refers to specific road sections (motorways) while (road users) charging usually applies to all roads of a specific territorial area.

[72] European Commission, Directive 1999/62/EC as modified by Directive 2006/38/EC and by Directive 2011/76/EU (Eurovignette)

The main aims of the measure are to internalise freight transport external costs and have revenues to pay for the road infrastructure maintenance and/or improvements.

Category	Scale of application
Regulation – Technology	City / FUA

PROBLEMS AND OBSTACLES IN THE DEVELOPMENT OF THE MEASURE TYPE

A strong consensus and public acceptance is needed; businesses must accept that transport activities pay for the external costs they produce.

A wider territorial coordination between regional / national schemes may be needed.

The management of the tolling system (private, PPP or private concession) and of the revenue flow is not an obstacle, but it must be mentioned as a challenge. It is challenging to create an efficient system both under the governance and financial perspective.

As a consequence of the tolling measures, goods vehicles may decide to change their routes, thus increasing the traffic/congestion on parallel highways/roads. This has to be considered when developing the system.

INVESTMENT AND OPERATIONAL COSTS OF THE MEASURE TYPE

Investment costs related to this measure may vary according to the scale of application and to the technology selected for its operations. We can consider investment and operational costs on a definitely higher scale than those of the other measure types.

BENEFITS OF THE MEASURE TYPE

The main benefit is that it internalises external transport costs. Its revenues can be used both for maintenance and security on the road infrastructure or used for other transport investments (for example by earmarking part of the revenues to such investments). Earmarking usually increases the public acceptance of the measure.

When the tolling scheme foresees prices reduction to cleaner vehicles the measure can positively impact on the emissions reduction.

Tolling has the potential to foster an optimisation of freight trips in terms of load factor and empty runs.

In a wider territorial application perspective, it can foster modal shift. In particular, national public authorities that implement such measure usually also have the purpose to foster modal shift from road to rail.

EXAMPLES OF APPLICATION

City	Description
Switzerland	A truck tolling system was introduced for the first time in 2001 and later revised in 2005 and 2008[73]. Besides, Switzerland developed accompanying measures, such as the Rail Reform (1999) and the Freight Traffic Transfer Act (2010). The objectives of the measure are to reduce freight transit traffic and external costs. The technology used is a "tachograph" (on-board unit (OBU), with GPS for enforcement checks). Tolls are applied on the road whole network and to all vehicles over 3.5 tons, with differentiated prices by maximum truck load (toll per tonne/km) and by EURO classes. Fees are also based on external costs[74]. The weight limit of the truck has been fixed at 40 tons, following a bilateral agreement with the European Commission. Revenues are used for railways development (2/3), including Alpine tunnels and high-speed links, and re-allocation to Cantons (1/3). Results show that between 2001 and 2005 the number of Km travelled by heavy goods traffic decreased by 6.4%, whereas the goods transported (tKm) increased by 16.4%. Since fees depend on the weight and emissions of the vehicle, there was a significant trend towards renovation of truck fleets. The increase in the number of cleaner vehicles combined with the reduction in Km travelled resulted in a substantial drop in the volume of pollutants from heavy traffic (e.g. 10% particle emissions, 14% nitrogen oxides, 6% CO_2).

2.7. Delivery and Servicing Plans

This type of measure takes into consideration the role that enterprises play in the logistics chain as main generators of freight demand. Within the same organisation, goods deliveries are often managed independently by different sectors. This reduces the efficiency of inbound logistics activities. The same measure applies to different companies located in the same specific city area. Delivery and Servicing Plans provide a freight management approach that represents an opportunity for the public and private sectors to deal with commercial vehicles activity. The main purpose is to optimise fleets and freight demand and reduce the number of trips. This measure is an effective freight Travel Plan that includes different and numerous sub-measures (e.g. consolidation centres, sustainable delivery modes) and that focuses on the reduction of CO_2, of congestions and on the improvement of residents' quality of life.

Category	Scale of application
Economic – Service	City centre, Specific city area in the FUA and City / FUA

PROBLEMS AND OBSTACLES IN THE DEVELOPMENT OF THE MEASURE TYPE

The measure requires data collection, to analyse the current logistics organisation of the involved companies and plan improvements. This phase could hide numerous barriers, such as the lack of data and of willingness to supply them.

Companies' engagement is fundamental and needs to be promoted by authorities.

[73] Source: http://www.ezv.admin.ch/zollinfo_firmen/04020/04204/04208/index.html?lang=en

[74] An example on how to calculate tolls is available at http://www.ezv.admin.ch/zollinfo_firmen/04020/04204/04208/04744/index.html?lang=en

INVESTMENT AND OPERATIONAL COSTS OF THE MEASURE TYPE

The measure has not itself specific investment costs. Some investment costs may derive from the implementation of the Plan's measures.

From an operational point of view and in the businesses' perspective, the measure brings a reduction of logistics costs, thanks to the optimization of the logistics organisation and activities.

From a public perspective, there are operative costs related to the promotion of the measure to engage companies, to the analytical and planning activities, as well as to monitoring results.

BENEFITS OF THE MEASURE

From a city perspective, the improvements are related to reduced noise and emissions, increased safety and better use of public infrastructures.

Public (in case DPSs are applied to authorities) and private organisations' benefit from improved quality of the transport services (reliability, efficiency) and saving in logistic costs.

Logistics and DSP companies have fuel savings and increased quality of the service.

Experiences demonstrate that weekly deliveries are reduced by 20% and there is a similar reduction in commercial movements[75].

EXAMPLES OF APPLICATION

City	Description
Brussels	The city adopted this measure to reduce the number of freight movements to/from enterprises and foster the use of sustainable freight vehicles, such as bicycles and electric tricycles. The measure is named *Plans de Livraison d'Enterprises*. In particular the City's purpose is to force enterprises generating big amount of goods to develop and implement DSPs.[76]
London	Transport for London has developed a document explaining in detail Delivery and Servicing Plans (DSPs) to companies[77]. In particular DSPs aim at proactively manage deliveries and servicing trips, promote safe and legal loading, select logistic providers committed to best practices (e.g. in the FORS scheme). The main goals of DSPs are: - saving money and time; - improve reliability; - improve safety; - reduce environmental impacts. The possible actions of a DSP concern: informing suppliers of the exact delivery location; implementing delivery booking systems; moving deliveries out of peak hours; reducing delivery frequencies; centralising the ordering system; consolidate the number of suppliers; consolidation centres.
Zagreb	Within Trailblazer project, the city of Zagreb focused on the achievement of environmental and transport services quality targets via DSPs. The project showed savings in fuel, CO_2 and energy consumption[78]. The project was focussed on a specific central city area.

[75] Source: Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013 (page 73)

[76] Source: Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013 (page 78)

[77] http://content.tfl.gov.uk/delivery-and-servicing-plans.pdf

[78] Source : The City Of Zagreb, Implementing regulatory measures in order to optimize freight deliveries (TRAILBLAIZER project, IEE), 2013 (page 59)

2.8. Mobile Depots

Mobile depots are mobile warehouses serving specific city areas. Last mile deliveries are operated by environmentally friendly transport vehicles, such as cargo bikes, trolleys or on foot. More precisely, a trailer is loaded as a depot outside the city and it is moved to a central parking area within the city centre. In the evening the trailer goes back to the logistics operator's main depot (e.g. together with the cargo bikes or trolleys). Last mile delivery can be implemented by sub-contractors of the logistics operator owning the depot. It is typically associated with a regulatory scheme preventing the access of vehicles to a specific city area. It is a cargo consolidation practice. This type of measure has been recently promoted by the private sector (e.g. TNT) with the support of the public sector.

Category	Scale of application
Services	City centre and Specific city areas in the FUA

PROBLEMS AND OBSTACLES IN THE DEVELOPMENT OF THE MEASURE TYPE

The concept of Mobile Depot has a positive environmental impact and it increases the liveability of a city. However it requires additional costs compared to the consolidation and distribution from a distribution centre with vans. These costs concern the investment costs in the mobile depot and operational costs (e.g. staff managing and delivering the service).

An agreement with the City authorities is needed to find an adequate location for the depot.

INVESTMENT AND OPERATIONAL COSTS OF THE MEASURE TYPE

As mentioned above, investments costs related to this measure consist of capital expenditure for the purchase of the mobile depot, as well as operational costs to manage, move and park the trailer and make deliveries.

In the case of Brussels a pilot test reported that while costs in the business as usual situation were about € 10,300, the pilot costs were € 27,300[79].

BENEFITS OF THE MEASURE TYPE

The measure significantly reduces pollution, because the last mile delivery takes place by sustainable modes. For example the Brussels pilot reports a reduction of CO_2 by 24% and of PM_{10} by 22%.

There is a benefit in terms of reduction of delivery vans in the concerned area and related reduced congestion and noise.

[79] Source: STRAIGHTSOL project, Final Publishable Report, 2015 (https://drive.google.com/file/d/0ByCtQR4ylfYDUFU1X2d5dkdReEk/view)

EXAMPLES OF APPLICATION

City	Description
Brussels	In Brussels a mobile depot pilot project was launched by TNT within the STRAIGHTSOL EU project for the duration of three months (May 2013 – August 2013). The concerned area was in the centre of Brussels. Its extension was 12 square Km, without any commercial dominance, but densely populated and highly urbanized. It was chosen by TNT because of its relatively high number of small shipments. The mobile depot was located at the Parc du Cinquantenaire from 9 am to around 6 pm. Operations were carried out by four riders on electrically driven cargo cycles. Results showed a reduction of the environmental impacts compared to the business as usual situation (CO_2 emission reduction by 24%), but a decrease in the punctuality of deliveries and pick-ups (from 95% to 87%). This was probably due to the fact that the operations had a pilot nature (and we assume that as such they were not fully integrated into usual logistics operations). Costs proved higher than delivering by vans.[80]
Turin	The project has been developed thanks to collaboration of TNT and Pony Zero (the latter operated the last mile transport by cargo bikes)[81]. The pilot project has a mobile depot located in Piazza dello Statuto in the very centre of the city. The project tests the feasibility of the solution and the transferability to other parts of the city or to other cities. Benefits in terms of emissions reduction have been estimated at 400 Kg of CO_2 per week.

2.9. Off-peak deliveries

This measure focuses on shifting delivery schedules out of peak hours or at night. It focuses on supply chains which do not necessarily need daytime deliveries, such as retail, wholesale, food, grocery. The measure is focussed on the benefit for transport operators deriving from the fact that delivering at night is cheaper because it is faster (e.g. less congestion, more space for unloading, less fines). Deliveries at night can be attended or un-attended and can require a change in receivers' staff working hours. Economic incentives may be given to start up the project, which remains voluntary.

Category	Scale of application
Service	City centre and Specific city areas in the FUA

PROBLEMS AND OBSTACLES IN THE DEVELOPMENT OF THE MEASURE TYPE

Noise issues may rise in night deliveries and residents may complain. This may be a reason to stop projects or not to activate them. In particular, Authorities may be worried about the noise impact on communities. Noise derives mainly from engines, loading / unloading activities and access to the delivery premises.

A change in the working time of receivers' may be needed if deliveries are not attended. This may increase costs for receivers.

A behavioural chance in businesses is needed, thus stakeholders and in particular the business community's engagement is needed.

[80] Source: STRAIGHTSOL project, Final Publishable Report, 2015

[81] Information about the project: https://www.tnt.com/express/it_it/site/home/Chi-e-TNT/Media-Relation/Comunicati-stampa/Mobile-Depot.html#

INVESTMENT AND OPERATIONAL COSTS OF THE MEASURE TYPE

Investment costs can concern equipment to reduce noise during the delivery (e.g. trailers, trucks, trolleys, pavement, covering the loading / unloading zones).

Additional operational costs compared to daytime deliveries can concern training to drivers on how reducing noise, staff costs for working outside usual working hours and lightning and insurance costs.

BENEFITS OF THE MEASURE TYPE

From a city perspective, off-peak deliveries reduce congestion and street space use. This also positively impacts on environmental emissions and in terms of road safety.

Transport companies have benefits in terms of cost savings due: less travel time, more deliveries in the same period of time, less fuel costs, more availability of parking, less fines. Drivers also reported to feel less stressed and felt safer when delivering at night[82].

Larger vehicles can be used, thus reducing costs.

Receivers have an increased reliability of deliveries; therefore safety inventory can be reduced. Moreover, compared to daytime deliveries, staff can focus on core business as deliveries are made at night.

The cost-benefit analysis of the measure developed in New York has shown positive results and the sustainability of the measure after the pilot phase[83].

EXAMPLES OF APPLICATION

City	Description
Brussels	The measure was tested by the two main Belgian food retailers, Colruyt and Delhaize, between January 2014 and April 2014. They experienced a shift of deliveries time from the standard window between 8am and 8pm to three different time frames: 6am-8am, 8pm-10pm or 10pm-6am. Noise level was measured to guarantee the respect of the Noise Abetment Law. The night delivery demonstration produced overall positive results in terms of vehicles speed and fuel consumption. In terms of unloading time, the presence of staff at the receiver reduced it, thus morning and day deliveries needed less time for unloading. Finally the analysis developed in the pilot project shows that compared to usual daytime deliveries, considering an investment in silent equipment (+24 % of investment costs) and a reduction of operational costs (-8%), the overall costs should increase by 3%.[84]
Barcelona	The City promoted a pilot project to deliver at night to a supermarket with a truck equipped with the PIEK technology to reduce noise (carpeted floor, low-noise pneumatic technology and low-noise rubber wheels). The pilot proved that journey times were reduced by 50%, fuel consumption up to 57% and emissions up to 53%.[85]

[82] Source: José Holguín-Veras, Rensselaer Polytechnic Institute, The good, the bad, and the ugly: lessons from the off-peak delivery project in New York, in Urban Freight for Livable Cities, The Volvo Research and Educational Foundations, 2012 (http://www.vref.se/download/18.11165b2c13cf48416de7e59/1377188311719/FUT-Urban-Freigth-Webb_low+2012.pdf).

[83] Source: José Holguín-Veras, Rensselaer Polytechnic Institute, The good, the bad, and the ugly: lessons from the off-peak delivery project in New York, in Urban Freight for Livable Cities, The Volvo Research and Educational Foundations, 2012

[84] Source: STRAIGHTSOL Project, Final Publishable Report, 2015 (page 24) (https://drive.google.com/file/d/0ByCtQR4ylfYDUFU1X2d5dkdReEk/view).

[85] Source: https://www.sintef.no/contentassets/067ef756b7644281ad2514bef7955c53/gbo/gbo-l-2.1-state-of-the-art-report--urban-logistics-practices_l.pdf (page 42).

City	Description
New York	The case concerned Manhattan and it was developed in collaboration between the United States Department of Transportation, the New York City Department of Transportation, Rensselaer Polytechnic Institute, Rutgers University, and ALK Technologies. Companies which tested the scheme received financial incentives ($ 300 per truck for small carriers up to $ 3,000 in lump sum payments for large receivers and major trucking firms). Foot Locker, Sysco, Whole Foods Market, and eight trucking companies were involved. The project started as a pilot and turned into a sustainable practice. The success of the scheme has been widely recognised. In June 2012 the Federal Highway Administration (FHWA) and Environmental Protection Agency (EPA) issued $ 450,000 in grants for small- to medium-size cities to implement off-peak goods movement /delivery programmes based on the NYC pilot project.[86]
Los Angeles	OffPeak was developed by PierPass Inc., a no-profit company created by port operators in order to address congestion, security and environmental issues in the Ports of Los Angeles and Long Beach. It provides an incentive for cargo owners to move cargo at night and on weekends, in order to reduce truck traffic and pollution during peak daytime traffic hours and to alleviate port congestion. The initiative is industry-driven. PierPass has achieved more than 35 million OffPeak truck trips since its inception in 2005. It provides a variety of benefits to members of the goods movement industry: spreading traffic across more hours, reducing the uncertainty of delivery times, and improving turn times for trucks and drivers.[87]

2.10. By boat logistics

This measure type provides a solution for urban delivery chains, focusing on the use of waterways as energy-efficient alternative to road transport. The main purpose is to optimize the multimodal transport network and reduce the congestion and pressure of freight vehicles on the urban road infrastructure. The measure integrates truck and boat services that allow the delivery from warehouses to urban areas through a canal network. The sustainability of the solution increases depending on the type of vessel and vans used (e.g. electric vessels and vans). Facilities (quays) for loading and unloading freight along canals / rivers are needed. The measure can focus on different supply chains, such as beverage and foods or low added-value chains, like waste or construction materials.

Category	Scale of application
Services	City centre and Specific city areas in the FUA

PROBLEMS AND OBSTACLES IN THE DEVELOPMENT OF THE MEASURE TYPE

The implementation of the measure requires city contexts where the waterway network is highly integrated in the urban environment. This is an external condition for the measure application.

It adds a loading / unloading process related to the use or waterway transport, as goods are not shipped to receivers directly from the distribution centre.

It is focussed on receivers positioned near the inland waterway; otherwise the road transport leg may increase and reduce the benefits of using boat transport.

[86] Source: José Holguín-Veras, Rensselaer Polytechnic Institute, The good, the bad, and the ugly: lessons from the off-peak delivery project in New York, in Urban Freight for Livable Cities, The Volvo Research and Educational Foundations, 2012

[87] Source: http://www.pierpass.org/offpeak-information

Light goods deliveries are more likely to be delivered through the road network than by waterway transport.

The waterway transport service must be fully integrated into the overall distribution chain, considering that transport operators need to comply with transport service quality levels. Otherwise they may consider the implementation of the measure not attractive.

Some companies need to follow headquarters' directions regarding logistics choices and delivery schemes. These schemes are applied national or international level and may not consider the opportunities at single city level.

By boat deliveries are strictly scheduled and have low flexibility in delivery time.

INVESTMENT AND OPERATIONAL COSTS OF THE MEASURE TYPE

In terms of investment costs (referring to waterway transport, as road transport would anyway be needed in a multimodal transport chain), we can include the loading – unloading areas along the inland waterway. The vessel itself is an investment, if not rented. Operational costs include staff, fuel and maintenance.

The quantification of cots depends on the scale of the operations.

BENEFITS OF THE MEASURE TYPE

The first advantage of the measure is that it moves from road transport to a sustainable transport mode (river) part of the tons / km of the transport chain. This brings benefits on environment, safety and liveability of the city centre, thanks to the reduction of the urban road length of delivery trips.

Environmental benefits increase in case the service is run with electric vehicles.

River transport can bring cost savings (depending on the specific business case) compared to road transport.

The measure fosters the use of the multimodal transport network.

EXAMPLES OF APPLICATION

City	Description
Balchik	The implementation of this measure is part of the city's potential future actions included in the SULP of the city. The measure concerns a twice a week delivery service from the port of Varna for goods directed to receivers in Balchik. Last mile transport in Balchik should be implemented by electric vehicles (vans or bikes). The main critical success factor is the regularity and quantity of goods which are transported both to and from Balchik.[88]
Paris	The measure was implemented in order to deliver food and beverage to Franprix supermarket stores through the river Seine. In particular the service included: a first leg by truck from the warehouse to the Port of Bonneuil-sur-Marne, where special containers are loaded on the vessel; after more than 20 km by barge, goods are unloaded in a central area of Paris and delivered by truck to shops located in a radius of 4 km. The analysis of the measure showed a saving of about 450,000 vehicle-kilometres which corresponds to a CO_2 reduction of 37% for the trip between the regional depot and the shops.[89]
Utrecht	The measure concerns the delivery of goods to shops, bars and restaurants in the city centre via river ("Beer Boat"). The Beer Boat operates six times per day, four days per week. It supplies more than 60 catering businesses. Utrecht also implemented river services for the collection of waste. A cost-benefit analysis of the Beer Boat showed a net present value of well over EUR 420,000 at a 3.5% discount rate. One of the critical success factors in the measure implementation was the presence of a regulatory scheme to access the city centre.[90]
Amsterdam	The river service is operated by Mokum Mariteam. It both focuses on deliveries to the city centre and on reverse logistics (waste and residues) to increase the sustainability of the service. The measure was born to answer the need of a construction company and of a waste company. It now includes deliveries to other clients, including hotels. The vessel is 20 m long and 4.25 m wide, with a load capacity of 85 m^3 (about 4 urban trucks). It was built in cooperation with Bocxe, which built the Beer Boat in Utrecht.[91]

2.11. Urban Distribution/Consolidation Centres

Urban Distribution/Consolidation Centres (UDC/UCC) are logistics facilities located in proximity of the receivers that they serve. Goods are consolidated at the logistics facilities and transported to their final destinations with environmentally sustainable transport solutions (e.g. clean fuelled vehicles or bikes). Cities create and start-up UCC/UDC to reduce congestion in the city centre or in a specific city area. A UCC/UDC usually operates within a regulatory scheme addressing the area that it serves. They are developed to deliver goods to private retailers or public organisations, as well as for specific sectors (e.g. the construction sector). In addition, a range of other value-added logistics and retail services can be provided. Usually, public supported the start-up of these logistics schemes, in terms of financial contribution or use of public spaces or facilities. The management of the UCC can find different solutions and can be tendered to private operators.

[88] Source: MemEx, ENCLOSE project - SULP Portfolio, 2016.

[89] Source: http://www.bestfact.net/wp-content/uploads/2016/01/CL1_051_QuickInfo_Franprix-en-Seine-16Dec2015.pdf

[90] Source:http://www.bestfact.net/wp-content/uploads/2016/01/CL1_151_QuickInfo_ZeroEmissionBoat-16Dec2015.pdf http://www.civitas.eu/content/city-distribution-boat

[91] Source: http://www.bestfact.net/wp-content/uploads/2016/01/CL1_127_QuickInfo_MokumMariteam-16Dec2015.pdf

Category	Scale of application
Regulation – Infrastructure – Service	City centre and Specific city areas in the FUA

PROBLEMS AND OBSTACLES IN THE DEVELOPMENT OF THE MEASURE TYPE

Since the UCC will influence the activities of many organizations in the city, it is necessary to start discussions well before its implementation with a broad group of stakeholders (e.g. businesses, carriers of goods, logistics companies). The implementation of the measure is a long-term process that should be thoroughly planned[92].

The UCC can, or rather have to be supported by other measures that change the supply conditions in the city (e.g. a specific regulation aiming at limiting the access to the city centre and promotional campaigns to use UCCs). According to Zunder and Marinov[93], planner-led UCC solutions are untenable in the modern liberal economy and the top down imposition of UCC works only in clearly controlled domains, therefore most UCC initiatives fail in a liberal economy where free choice and market economics apply.

Non market distortion should be taken into account when setting up the measure.

The success of this type of logistics scheme is highly dependent on a strong participation of retailers and suppliers and their demand to deliver/pick-up in the city centre.

Many UCC/UDC failed when public contribution stopped after the start-up phase.

UCC /UDC are normally viable solutions for big cities or metropolitan areas, where they can develop economies of scale.[94]

From the logistics point of view, the implementation of the UDC means the addition of a segment in the distribution chain, and associated additional costs.

INVESTMENT AND OPERATIONAL COSTS OF THE MEASURE

The costs of the measures can be considered higher than other measure types that we have analysed, because UCCs/UDCs are logistics platforms. The quantification of costs obviously depends on the dimension of operations of the UCC/UDC.

Concerning investment costs they mainly include: the infrastructure (new or renewal of an existing one for logistics purposes) and the related (eventual) works for its accessibility; the internal physical equipment and facilities related to its warehousing function (including the office to run it); the IT system to manage the UCC/UDC; the fleet for last mile delivery. Concerning capital expenditures they can be reduced if the UCC/UDC is part of an existing and running logistics platform which starts serving the urban centre.

Concerning operational costs they mainly include the costs of the logistics operations (staff, maintenance, costs for running the fleet and internal operations).

BENEFITS OF THE MEASURE TYPE

The consolidation process reduces the number of trips in the specific area served by the UCC/UDC.

The use of clean fuelled vehicles reduces pollution and can reduce noise (e.g. electric vehicles).

[92] Source: M. Pokorná & K. Nedvědová, Goods logistics in the city centre of Brno, 2014.

[93] Source: T. Zunder and M. Marinov, Urban freight concepts and practice: would a traditional UCC scheme work?, 2011

[94] It is anyway to be mentioned that there are cases of micro-consolidation platforms.

Consequently, benefits concern the reduction of greenhouse gas emissions from freight transport, saving in fuel consumption and less congestion.

The proximity of UCC to final destinations can increase the quality of transport services (on time deliveries).

Logistics operators using the UCC/UDC may want to avoid last mile transport which, due to congestion, impact on their costs (on the other hand there may be an issue with the fact that they may want to keep contact with their clients).

Retailers can avoid costs for logistics activities such as storage management, reverse logistics.[95]

EXAMPLES OF APPLICATION

City	Description
Brno	The city centre of Brno suffers an increasing traffic, also caused by freight deliveries. The aim of the measure (starting in 2016) is to study a UCC solution in an area near Brno international airport. The location meets the following requirements: possibility to enlarge the area in the next 25 years, direct connection between the suburbs and the centre, as well as transport links to the city road network, highway network, railways and the international airport. A cost-benefit analysis has evaluated the feasibility of the UCC and suggested that it is operated by the business sector. It is planned to introduce and enforce restrictive measures in the centre to support the UCC operations.[96]
Toulouse	The measure is part of the city freight plan and it focuses on the delivery of more goods storage and re-distribution sites to answer the development of the metropolitan area. Different types of platforms are envisaged, including multimodal ones. The goal is consolidating and grouping deliveries.[97]
Paris	The measure is a partnership between the city of Paris and the private operator Chronopost. The solution is characterized by an underground urban logistics area of 1000 square metres under Place de la Concorde where goods, arriving from Chronopost's warehouse in Bercy, are delivered to the 7th and the 8th *arrondissements* by a clean fleet (ten vehicles in 2010). Results showed a consistent reduction in CO_2 emission and a productivity gain in urban deliveries.[98]
Lucca	Lucca's SULP foresees the enhancement of the services provided by Luccaport (the city UCC). The strategy is structured in three phases: 1) the concession of Luccaport to a private operator, in particular with reference to transport activities and to the management of the depot; 2) developing shared projects with businesses; 3) marketing the provided services. Moreover it is planned to install a photovoltaic system in the UCC. The project is to be finished in 2020. Environmental benefits are estimated in an emission reduction per year of 28 tons of CO_2, 52 Kg of NOx, 120 Kg of CO, 5.8 Kg of PM and energy savings of 110,000 kWh.[99]

[95] Source: MemEx, ENCLOSE project - SULP Portfolio, 2016

[96] Source: http://www.civitas.eu/content/optimizing-city-center-supply

[97] Source: Tisséo - Syndicat Mixte des Transports en Commun de l'Agglomération Toulousaine, PDU - Plan de Déplacements Urbains de la grande agglomération toulousaine, 2012 (page 158)

[98] Source: SINTEF Technology and Society, State of the art report. Urban logistics practices, 2012

[99] Source: MemEx, ENCLOSE project - SULP Portfolio, 2016

City	Description
Almada	The city of Almada has planned the implementation of a UCC in a parking area right outside the city and close to the junction connecting the city with the main city road network. An initial "light" solution was preferred in order achieve the economic sustainability of the solution while reducing risks on failures. The services and the dimension of the UCC have the capacity to be extended at a later stage after the start-up. Given a daily covered distance of 40-60km/day electric vehicles are the most suitable solution. The city also plans an ICT system to manage and plan freight services. Concerning the UCC management, at the beginning a full public management is planned, while at a later stage a public owned company, a PPP or a service procurement partnership are foreseen. The initial investment is estimated at about € 370,000 and operating and maintenance yearly costs in the start-up phase are estimated at about € 200,000 (not including depreciation costs and vehicles recharging costs). The business case reports that Almada's UCC is economically sustainable with 120 deliveries/day. [100]
Dundee	The UCC is planned in the City's SULP. The ideal location of the UCC is on the North-West fringe of Dundee, to intercept road freight movements from the main access route from the distribution centres in the Central Belt, central Scotland and England and UK's main sea ports. The Dundee UCC will serve the centre and the areas of the University and hospital and it will target small to medium sized retailers. The UCC scheme will provide additional services to users (collection and recycling of waste, off-site storage, etc.). Deliveries will be operated by electric/low carbon fuelled vehicles. The plan takes into consideration the possibilities of building new facilities or using existing ones to run the UCC.[101]
Norwich	In 2007 the city implemented a UCC scheme through a partnership between Norfolk County Council and the logistics company Foulger Transport. The partnership was established following a competitive procurement process. The objective was to achieve an overall reduction in the number of freight vehicle movements within Norwich urban area and the city centre, by consolidating loads. Although the measure achieved limited success in terms of number of clients, there was a high level of satisfaction with the service quality.[102]
London	The city has included the development of a UCC specifically dedicated to the construction sector (London Construction Consolidation Centre) in the London Freight Plan. It is a distribution centre and delivery service area for construction materials to four major building projects in the city. The benefits reported show: - reduction of 70-80% of CO_2 emissions; - reduction of 70% in the number of vehicles travelling to the construction sites with an improvement in the quality of service; - increase in the delivery flexibility.

2.12. Coordination of urban freight rules in the city

This type of measure has the purpose of coordinating or harmonizing freight rules at the city or FUA level. It responds to the need of businesses to have clear and homogenous regulations which are not different or conflicting within the districts of the same City/FUA. The measure promotes horizontal governance among authorities of the same FUA and the coordination of city logistics regulations.

Category	Scale of application
Regulation	City / FUA

[100] Source: MemEx, ENCLOSE project - SULP Portfolio, 2016

[101] Source: MemEx, ENCLOSE project - SULP Portfolio, 2016

[102] Source: http://www.civitas.eu/content/establishing-urban-transhipment-centre

PROBLEMS AND OBSTACLES IN THE DEVELOPMENT OF THE MEASURE TYPE

The development of the measure requires extensive coordination and consultation work between different stakeholders. First of all, collaboration between authorities is needed. Secondly, the involvement of businesses (for example within a Freight Quality Partnership) is very important to understand the problems they face due to fragmented regulations and understand which actions are to be put in place. This process can take a long time.

Single authorities may not be willing to change their regulations and this may compromise the measure overall success.

INVESTMENT AND OPERATIONAL COSTS OF THE MEASURE TYPE

There are no specific costs related to this measure since it has regulative nature. Minor investments are needed in changing signage and informing businesses before its start-up phase.

BENEFITS OF THE MEASURE TYPE

Harmonisation of city logistics rules means simplification which ease logistics business activities.

The coordination of rules can help a better organisation of transport activities within the city (for all transport flows which take place on more districts).

EXAMPLES OF APPLICATION

City	Description
Toulouse	The municipal (*Communes*) regulations in goods delivery within Toulouse urban area are different. The PDU has foreseen to harmonize time windows, parking and access regulations. The goal is that of extending the *Charte Livraison* (including city logistics rules) to Municipalities by developing cooperation among authorities.[103]
Emilia-Romagna	The measure developed harmonised city logistics rules in different Municipalities in Emilia-Romagna region. In particular the measure was consistent with and gave continuity to the existing agreements and plans on sustainable mobility (e.g. Programme Agreement 2012-2015 for Air Quality, the Regional Electric Mobility Plan). Under the initiative of Emilia-Romagna Region and in cooperation with the Institute for Transport and Logistics (within the C-LIEGE European IEE project), all the main Municipalities agreed the time access regulations of freight vehicles to Limited Traffic Zones for specific vehicles types. In particular the measure concerned the minimum time window of access to LTZs for third party transport providers. The measure represents a case of simplification of rules for logistics operators, while ensuring the autonomy of single Municipalities in ruling city logistics (in fact the rule concerned a minimum time window and single Municipalities could enlarge these windows).

[103] Source: Tisséo - Syndicat Mixte des Transports en Commun de l'Agglomération Toulousaine, PDU - Plan de Déplacements Urbains de la grande agglomération toulousaine, 2012 (page 157)

3. Overview and benchmark of measures types

The following table includes an overview of the low carbon logistics measure types and their benchmarking with reference to their costs, territorial level of applicability and category.

Table 22: Overview and benchmark of logistics measures

Parameters of assessment	Off-street loading bays	Cargo bikes	Clean fuels and vehicles mobility schemes	Spatial planning for logistics	Freight routes	Truck tolling	Delivery and servicing plans	Mobile depots	Off peak deliveries	By boat logistics	Urban Distribution Centres	Coordination of urban freight rules in the city
Category												
Regulation	•	•	•		•	•					•	•
Technology					•	•						
Infrastructures	•		•	•							•	
Services		•					•	•	•	•	•	
Industrial / economic			•				•					
Urban planning	•			•								
Energy			•									
Scale of application												
Specific city area	•	•					•	•	•	•	•	
City centre	•	•	•				•	•	•	•	•	
City/FUA	•		•	•	•	•	•					•
Costs	€€	€	€€€	€	€	€€€	€	€	€	€€	€€	€

Source: Steer Davies Gleave's elaboration

With reference to the category of the measure types, it is to be mentioned that only the Clean fuels and vehicles mobility schemes is included in the category concerning energy measures.

Despite this, several measures have indirect energy benefits due to the optimisation of transport flows (e.g. fuel savings), introduction of clean vehicles for logistics operations (e.g. electric mobility) or modal shift (e.g. use of transport means with lower energy impact). We have included in the energy category

only the measure type that can directly focus on energy issues (in particular the development of electric mobility schemes which can be part of energy policies at urban level).

With reference to the benchmark of the costs, the types of measures have territorial scales of applicability, different potential scales of investment and operations, as well as different natures. It is therefore difficult to assess in detail the absolute costs of the measure types and the extent to which one type of measure has more or less costs the others.

Nevertheless we have identified three groups. The three groups include:

- The group which marked with the symbol "€". The comparatively less expensive measures are those which have mainly a regulatory nature. This concerns the public perspective and not the eventual impacts on the business sectors. The following measures' types can be included:
  - Spatial planning for logistics;
  - Freight routes;
  - Delivery and servicing plans;
  - Off peak deliveries;
  - Coordination of urban freight rules in the city.
- Further measures types included in this group are those for which the dimension of operations and investments are limited and which are also put in practice as an answer to a system of city logistics regulations. They are:
  - Cargo bikes;
  - Mobile depots.
- The group which marked with the symbol "€€". This includes:
  - Off-street loading bays, considering that infrastructural works are needed to include logistics areas within private building.
  - By Boat logistics, considering that an investment in a fleet is needed.
  - Urban Distribution Centres, because they include an infrastructural investment.
- The group which marked with the symbol "€€€". This includes:
  - Clean fuels and vehicles mobility schemes. We considered that in case the application is not only related to a regulatory scheme for the inner part of the city, the measure type is complex, including actions to subsidize the procurement of green vehicles and the development of a clean fuel infrastructure on a territorial level which is wider than a part of a city.
  - Truck tolling. We considered considering that, further than a regulatory action, investments in the technology, management, governance and operations of the system are needed and the fact that the type of measure should find application on a wider territorial scale.

E. Key Performance Indicators in logistics planning

This last Section focuses on Key Performance Indicators (KPI) related to Logistics Plans monitoring. It is an example usable by the SULPiTER project authorities.

It is important to mention that the definition of KPIs should be based:

- on the specific issues that each city wants to face, and in particular on the logistics problems it wants to solve;
- consequently, on the specific objectives of the logistics plan that each SULPiTER partner city is going to develop.

The following table includes an overview of possible KPIs to be included in SULPs.

The availability of data and efforts to collect them should also be considered.

Table 23: Examples of KPIs which could be included in a logistics plan

Thematic area	Key Performance Indicator
Environment	CO_2 emissions (g/km)
	NO_2 emissions (g/km)
	PM_{10} emissions (g/km)
	CO concentration (g/m3)
	Noise level (dB)
Energy	Total Energy consumption (kWh/year)
	Energy efficiency (yearly kWh/sqm surface in warehousing)
	Fuel consumption per Km (metrics depending on vehicle type)
Transport	Average number of km per trip (Km/Trip)
	Average number of km per vehicle (Km/Vehicle)
	Total distance travelled in urban area (Km per truck weight category or Km per vehicles Euro category type)
	Number of Empty runs (% of runs with load on total runs)
	Number of freight vehicles per category (weight and/or Euro) entering the urban area or a part of it (n.)
	Time to complete a delivery route (minutes)
	Average time for loading/unloading (minutes)
	Number of loading/unloading areas (n.)
	Average vehicles speed per trip (minutes)
	Average vehicles load factor (% in weight or volume per Km)
	Quality of transport services (% of on time deliveries on total deliveries)
	Number of unauthorised parking in the urban area or in a part of it (n.)
	Quantity of logistics areas in the city or in a part of it (sqm)
	Average deliveries per trip (n.)
	Road occupancy by freight vehicles (% of surface at a given time)
Economy	Total delivery costs (€ per Km or Ton)
	Investment in clean energy networks and vehicles (€)

Thematic area	Key Performance Indicator
	Value of goods lost for theft or damage (€ / year)
	Average logistics costs on turnover (€)
Society	Accidents involving freight vehicles (n.)
	People killed or seriously injured in collisions involving freight vehicles (n.)
	Percentage of businesses satisfied with traffic situation in the city (%)

Source: Steer Davies Gleave's elaboration on multiple sources

F. Conclusions

This work has focussed on two main strands of activities:

- Understanding the extent to which the SUMP concept finds application in logistics planning and to which extent logistics is included in SUMPs and in mobility planning;
- Identifying and analysing low carbon urban logistics measures and building a framework of the potential interventions that authorities can implement.

With reference to the first bullet point, we found a great diversity of mobility and logistics planning documents in the panel of 129 cities that were analysed. This is due to different factors:

- There are different national frameworks concerning the development of mobility planning;
- The SUMP is a relatively recent concept;
- Single cities can have developed different mobility planning documents.

The SUMP concept is diffusing and 34.9% of the city panel developed SUMPs. One major challenge of the analysis was to understand if the mobility planning documents were SUMPs. In fact many of the planning documents could be considered to a great extent as SUMPs, but not be labelled as such.

Logistics is usually part of SUMPs (84.4% of the SUMPs include logistics) and this is in line with fact that the European Commission's ELTIS guidelines foresee to include logistics in the development of Sustainable Urban Mobility Plans.

If we analyse the presence of logistics in mobility planning, the overall result is in our opinion positive. 72.1% of the analysed cities have taken into consideration logistics in mobility planning. This was done in two main ways: including logistics in mobility plans (which is the case in the majority of the analysed cities) or developing ad hoc planning documents entirely focussing on logistics.

The latter case is very infrequent and only 15 of the cities in the panel developed urban logistics plans or Sustainable Urban Logistics Plans (SULPs). We think that this is not an element of weakness, if logistics is fully included and mainstreamed into a wider mobility planning document.

With specific reference to the SULPs concept, we can say that it seems to be a very specific. In fact, within the cities panel only the 9 cities which participated to ENCLOSE European Funded project have developed SULPs. The same ELTIS guidelines do not foresee the SULP concept. Nevertheless SULPs represent valuable and structured processes in logistics planning, which are suitable to be integrated into SUMPs because they follow the SUMP process.

The further work that we developed focused on the detailed analysis of the logistics planning and measures in 10 European cities. The main results are:

- A wider territorial approach to urban logistics issues is already in place. The plans that we analysed include strategic and operational measures which do not only focus on the core urban area and which extend at the level of Functional Urban Area.
- There is not a sequential or time based approach in logistics planning versus urban mobility planning. Logistics plans can follow Mobility Plans, anticipate or be directly included in them. This depends on the specificity of each city, of the planning document it has developed and on the timing of these documents.
- Cities of different dimension face urban logistics issues in their plans. Of course we expect that bigger cities have a more compelling need to do it, due to a much more complex freight transport system and the need to strategically drive it.

- The measures that we found in the plans are quite heterogeneous; this can be explained by the different cities' characteristics and logistics issues.

The second strand of activities identified a wide array of urban logistics measures. Cities have multiple possibilities concerning the measures and combination of measures that they can apply. This obviously depends on the specific logistics issues they need to face.

With specific reference to the 12 types of measures that we have selected and analysed, each is suitable to be applied at different territorial levels: city centre, a specific city area within the wider Functional Urban Area (FUA), or at the overall City – FUA level.

This depends on the single measure types (for example an Urban Consolidation Centre will not serve the overall city area but its centre or a specific city area), as well as on the decisions of authorities in the development of the measures (for example a clean fuel measure may be applied in a regulatory perspective in the city centre or be a mobility public action for the whole Functional Urban Area).

Overall, we can identify 3 clusters with reference to the territorial level of applicability of measures :

- The first cluster includes types of measures which are typically applied in a specific part of the city, including the city centre. They are:
  - Cargo bikes;
  - Mobile depots;
  - Off peak deliveries;
  - By boat logistics;
  - Urban Distribution Centres.
- The second cluster includes types of measure which typically at the wider city – FUA level. They are:
  - Spatial planning for logistics;
  - Freight routes;
  - Truck tolling;
  - Coordination of urban freight rules in the city.
- The third cluster includes types of measures which can find application at different territorial levels in the city. They are:
  - Off-street loading bays;
  - Clean fuels and vehicles mobility schemes;
  - Delivery and servicing plans.

The types of measures that we analysed concern regulatory, technology, infrastructure, services, economic, urban and energy actions. In general we can say that the types of measures are more frequently concerning regulation and transport services. This is due to the ex-ante choice of the types of measures that we decided to analyse and this is in line with the SULPiTER project's scope of supporting authorities in regulating urban logistics and promoting sustainable and efficient logistics services.

The cost of implementation of the measures is an important element for authorities that implement them. In this regards we can identify three groups with rising costs:

- Regulatory measures have in general lower cost in terms of public budget. Of course the costs generated for businesses should be taken into account and their acceptance should be prepared

with dialogue and involvement of businesses in the measures planning. Other measures with lower costs are those which focus on transport organisation improvements. Finally further measures with limited costs are those whose dimension of operations and related investments are limited. The group include:

  - Spatial planning for logistics;
  - Freight routes;
  - Delivery and servicing plans;
  - Off peak deliveries;
  - Coordination of urban freight rules in the city.
  - Cargo bikes;
  - Mobile depots.

- Measures requiring investments in fleets of physical infrastructure present higher costs. This includes:
  - Off-street loading bays;
  - By Boat logistics;
  - Urban Distribution Centres.
- Finally, there is a group of measures which present further higher costs, due to the fact that they are generally applied at the wider FUA level and that they require infrastructural, operational and IT efforts for their implementation. This includes:
  - Clean fuels and vehicles mobility schemes;
  - Truck tolling.

A final consideration we bring to the SULPiTER project partners concerns the fact that they will have to analyse, identify and plan a mix of measures, be they in the list of this report or further ones, considering that the success of their urban logistics policies will depend on multiple and synergic actions.

APPENDIX A - Bibliographic sources

A.1 Bibliographic sources per city

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POLAND	Warsaw	• Capital City of Warsaw, The Transportation System of Warsaw: Sustainable Development Strategy up to the year 2015 and successive years – SYNTHESIS, 2010
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	Bistriţa	• BUMP – Boosting Urban Mobility Plans, Report on preparation and implementation of coaching activities, 2016, p.63
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SLOVENIA	Ljubljana	• City of Ljubljana, Smart mobility successes in the European Green Capital 2016, 2016 • http://www.ljubljana.si/en/green-capital/green-aims/ • http://www.civitas.eu/content/integrated-freight-policy-development
SPAIN	A Coruña	• http://www.coruna.gal/servlet/Satellite?argIdioma=es&c=Page&cid=1371086241469&pagename=Movilidad%2FPage%2FGenerico-Page-Generica • http://www.coruna.es/pmus/es#&panel1-3 • https://www.ineco.com/webineco/microsites/informes-anuales/2013/en/actividad/transporte_urbano/article3.php
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UNITED KINGDOM	Belfast	• https://www.infrastructure-ni.gov.uk/publications/belfast-metropolitan-transport-plan
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	Liverpool	• A New Mobility Culture for Merseyside - The Third Local Transport Plan for Merseyside 2011-2015 • A New Mobility Culture for Merseyside - The Third Local Transport Plan for Merseyside 2011-2015, Annex 4 – Freight Strategy • European Parliament, Directorate General for Internal Policies, Integrated Urban Transport Plans and Cohesion Policy, 2012, page 57
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APPENDIX B - Cities, low carbon logistics measures and sources

State	City	ID	Measure	Source
Austria	Vienna	Vienna.01	Creation of a data sharing system in mobility	- Vienna City Administration, Urban Mobility Plan Vienna, 2015 (measure 07, page 46)
Austria	Vienna	Vienna.02	Further development of goods distribution centers and a concept for commercial use areas	- Vienna City Administration, Urban Mobility Plan Vienna, 2015 (measure 29, page 78)
Austria	Vienna	Vienna.03	Multifunctional lanes with loading zones for private and business transport	- Vienna City Administration, Urban Mobility Plan Vienna, 2015 (measure 30, page 78)
Austria	Vienna	Vienna.04	Creation of joint loading yards	- Vienna City Administration, Urban Mobility Plan Vienna, 2015 (measure 31, page 79)
Austria	Vienna	Vienna.05	Community parcel boxes for deliveries	- Vienna City Administration, Urban Mobility Plan Vienna, 2015 (measure 32, page 79)
Austria	Vienna	Vienna.06	Good conditions for freight bikes	- Vienna City Administration, Urban Mobility Plan Vienna, 2015 (measure 33, page 80)
Austria	Vienna	Vienna.07	Targeted funding of e-mobility	- Vienna City Administration, Urban Mobility Plan Vienna, 2015 (measure 34, page 80)
Austria	Vienna	Vienna.08	Introduction of a general truck toll	- Vienna City Administration, Urban Mobility Plan Vienna, 2015 (measure 35, page 82)
Austria	Vienna	Vienna.09	i-Ladezone: Intelligent monitoring of loading bays	- http://www.bestfact.net/wp-content/uploads/2016/01/CL1_031_QuickInfo_iLadezonen-16Dec2015.pdf

State	City	ID	Measure	Source
Austria	Vienna	Vienna.10	ILOS - Intelligent Freight Logistics in Urban Areas: Freight Routing Optimization	- http://www.bestfact.net/wp-content/uploads/2016/01/CL1_029_QuickInfo_ILOS-16Dec2015.pdf
Belgium	Ghent	Ghent.01	Institutional platform for city freight management	- http://www.civitas.eu/content/institutional-platform-city-freight-management
Belgium	Brussels	Brussels.01	Identify and reserve land for urban distribution	- Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013, pages 34,50
Belgium	Brussels	Brussels.02	Freight routes	- Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013, page 56
Belgium	Brussels	Brussels.03	Tolling freight transport	- Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013, page 58
Belgium	Brussels	Brussels.04	Night deliveries	- Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013, page 62 - STRAIGHTSOL Project, Final Publishable Report, 2015, page 24
Belgium	Brussels	Brussels.05	Service and delivery plans	- Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013, page 78
Belgium	Brussels	Brussels.06	Mobile Depot	- Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013, page 40 - STRAIGHTSOL Project, Final Publishable Report, 2015, page 13
Bulgaria	Burgas	Burgas.01	Ferry boat transportation of goods for the commercial system	- BUMP – Boosting Urban Mobility Plans, Report on preparation and implementation of coaching activities, 2016, 46
Bulgaria	Balchik	Balchik.01	Time limitation of vehicles access to the hotels area near the sea-shore	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Bulgaria	Balchik	Balchik.02	Space limitation of vehicles and tourist cars	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Bulgaria	Balchik	Balchik.03	By boat logistics	- MemEx, ENCLOSE project - SULP Portfolio, 2016

State	City	ID	Measure	Source
Croatia	Zagreb	Zagreb.01	Central distribution station for road freight traffic	- http://www.ipzp.hr/en/master-plan - https://ec.europa.eu/energy/intelligent/projects/sites/iee-projects/files/projects/documents/trailblazer_dsp_toolkit_en.pdf - City of Zagreb, Zagrebplan - City of Zagreb Development Strategy, Strategic Development Directions for the period ending in 2013, 2010
Croatia	Zagreb	Zagreb.02	Freight delivery restriction	- http://www.civitas.eu/content/freight-delivery-restrictions
Czech Republic	Brno	Brno.01	Optimizing city center supply (implementation of a City Distribution Centre)	- http://www.civitas.eu/content/optimizing-city-center-supply - M. Pokorná & K. Nedvědová, Goods logistics in the city centre of Brno, 2014
Denmark	Aalborg	Aalborg.01	Creation of loading/unloading zones	- Transport And Innovation Logistics by Local Authorities with a Zest for Efficiency and Realization (TRAILBLAZER), O2.1 CASE STUDY Aalborg, Denmark, Sustainable City Logistics Solutions, 2011
Denmark	Aalborg	Aalborg.02	Co-ordination of freight activity among the distributors	- Transport And Innovation Logistics by Local Authorities with a Zest for Efficiency and Realization (TRAILBLAZER), O2.1 CASE STUDY Aalborg, Denmark, Sustainable City Logistics Solutions, 2011
Denmark	Aalborg	Aalborg.03	Use of electric vehicles	- Transport And Innovation Logistics by Local Authorities with a Zest for Efficiency and Realization (TRAILBLAZER), O2.1 CASE STUDY Aalborg, Denmark, Sustainable City Logistics Solutions, 2011
Denmark	Aalborg	Aalborg.04	Regulation and loading/unloading access restrictions within the pedestrianized area for freight activity	- Transport And Innovation Logistics by Local Authorities with a Zest for Efficiency and Realization (TRAILBLAZER), O2.1 CASE STUDY Aalborg, Denmark, Sustainable City Logistics Solutions, 2011
Denmark	Aalborg	Aalborg.05	"One shop" principal	- Transport And Innovation Logistics by Local Authorities with a Zest for Efficiency and Realization (TRAILBLAZER), O2.1 CASE STUDY Aalborg, Denmark, Sustainable City Logistics Solutions, 2011
Denmark	Aalborg	Aalborg.06	Environmental zones	- http://www.civitas.eu/content/environmental-zone

State	City	ID	Measure	Source
Finland	Helsinki	Helsinki.01	Improving links of national importance as well as logistics quality routes	- https://www.hsl.fi/sites/default/files/uploads/hlj_2015_short_version_en.pdf
Finland	Helsinki	Helsinki.02	Development of transverse logistics links needed in Central Uusimaa	- https://www.hsl.fi/sites/default/files/uploads/hlj_2015_short_version_en.pdf
Finland	Helsinki	Helsinki.03	Implementation model for freight traffic parking and rest areas	- https://www.hsl.fi/sites/default/files/uploads/hlj_2015_short_version_en.pdf
Finland	Helsinki	Helsinki.04	Mid-sized infrastructure projects and information to ensure the service level of the street and road network	- https://www.hsl.fi/sites/default/files/uploads/hlj_2015_short_version_en.pdf
France	Toulouse	Toulouse.01	Freight transport Atelier	- Tisséo - Syndicat Mixte des Transports en Commun de l'Agglomération Toulousaine, PDU - Plan de Déplacements Urbains de la grande agglomération toulousaine, 2012, page 156
France	Toulouse	Toulouse.02	Extending the *Charte livraison*	- Tisséo - Syndicat Mixte des Transports en Commun de l'Agglomération Toulousaine, PDU - Plan de Déplacements Urbains de la grande agglomération toulousaine, 2012, page 157
France	Toulouse	Toulouse.03	Create freight re-distribution sites	- Tisséo - Syndicat Mixte des Transports en Commun de l'Agglomération Toulousaine, PDU - Plan de Déplacements Urbains de la grande agglomération toulousaine, 2012, page 158
France	Toulouse	Toulouse.04	Freight routes	- Tisséo - Syndicat Mixte des Transports en Commun de l'Agglomération Toulousaine, PDU - Plan de Déplacements Urbains de la grande agglomération toulousaine, 2012, page 159
France	Toulouse	Toulouse.05	Developing clean urban logistics	- http://www.civitas.eu/content/developing-clean-urban-logistics-0 - CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 37
France	Lyon	Lyon.01	CityFret - city logistics game	- Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013, page 73

State	City	ID	Measure	Source
France	Lyon	Lyon.02	Logistics urban area (ELU)	- Agence d'urbanisme pour le dévelopment de l'aglomération lyonnaise, Suivi évalutatif du PDU, Le transport de marchandises en ville, 2014, page 6
France	Lyon	Lyon.03	Time limitation for freight vehicles and access limitation on the basis of weight and emissions	- Agence d'urbanisme pour le dévelopment de l'aglomération lyonnaise, Suivi évalutatif du PDU, Le transport de marchandises en ville, 2014, p.9 - CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 28
France	Lyon	Lyon.04	New distribution truck	- SINTEF Technology and Society, State of the art report. Urban logistics practises, 2012
France	Lyon	Lyon.05	Freight bus and delivery van	- SINTEF Technology and Society, State of the art report. Urban logistics practices, 2012
France	Lyon	Lyon.06	Bentobox	- SINTEF Technology and Society, State of the art report. Urban logistics practices, 2012
France	Paris	Paris.01	Preserve and develop logistics sites	- Île-de-France & STIF, Plan de déplacements urbains d'Île-de-France, 2015, page 171
France	Paris	Paris.02	Develop inland waterways transport	- Île-de-France & STIF, Plan de déplacements urbains d'Île-de-France, 2015, page 176
France	Paris	Paris.03	Improve rail transport	- Île-de-France & STIF, Plan de déplacements urbains d'Île-de-France, 2015, page 178
France	Paris	Paris.04	Improve the effectiveness of road freight transport and optimizing deliveries	- Île-de-France & STIF, Plan de déplacements urbains d'Île-de-France, 2015, page 181
France	Paris	Paris.05	Favoring the diffusion of clean freight fleets	- Île-de-France & STIF, Plan de déplacements urbains d'Île-de-France, 2015, page 184
France	Paris	Paris.06	Monoprix	- Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013, page 43
France	Paris	Paris.07	Tramfret	- Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013, page 67

State	City	ID	Measure	Source
France	Paris	Paris.08	Distripolis	- http://www.bestfact.net/wp-content/uploads/2016/01/CL1_052_QuickInfo_Distripolis-16Dec2015.pdf
France	Paris	Paris.09	Supermarket stores deliveries using waterways in Paris	- http://www.bestfact.net/wp-content/uploads/2016/01/CL1_051_QuickInfo_Franprix-en-Seine-16Dec2015.pdf
France	Paris	Paris.10	La Petite Reine : Home deliveries using Cargocycles and electric vans in Paris	- http://www.bestfact.net/wp-content/uploads/2016/01/CL1_091_QuickInfo_La-Petite-Reine-16Dec2015.pdf
France	Paris	Paris.11	Creating delivery areas for big generators	- Mairie de Paris, Le transport de marchandises dans la Ville de Paris, public presentation 2009, page 10
France	Paris	Paris.12	Urban distribution center-Chronopost Concorde	- Mairie de Paris, Le transport de marchandises dans la Ville de Paris, public presentation 2009, page 16 - SINTEF Technology and Society, State of the art report. Urban logistics practices, 2012
Germany	Bremen	Bremen.01	Environmental loading point (ELP)	- MDS Transmodal Limited and Centro di ricerca per il Trasporto e la Logistica (CTL), DG MOVE Study of Urban Freight Transport – Final Report, 2012, p.79 - CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 33
Germany	Bremen	Bremen.02	Introducing bio-diesel trucks	- http://www.civitas.eu/content/introducing-compressed-natural-gas-trucks
Germany	Bremen	Bremen.03	Improving city logistics through logistics software	- SINTEF Technology and Society, State of the art report. Urban logistics practices, 2012
Germany	Berlin	Berlin.01	Establishing an inner-city logistics center	- http://www.civitas.eu/content/establishing-inner-city-logistics-centre
Germany	Berlin	Berlin.02	Deliveries with low-noise electric trucks	- http://www.bestfact.net/wp-content/uploads/2016/01/CL1_126_QuickInfo_MeyerMeyer-16Dec2015.pdf
Germany	Berlin	Berlin.03	Urban freight laboratory area	- http://www.bestfact.net/wp-content/uploads/2016/01/CL1_034_QuickInfo_BerlinBentoboxLaboratory-16Dec2015.pdf

State	City	ID	Measure	Source
Germany	Berlin	Berlin.04	Cargo by electro bicycle transporter	- CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 42
Germany	Berlin	Berlin.05	Efficiency and clearer air through freight pilot	- CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 43
Greece	Serres	Serres.01	User's awareness raising and information on sustainable urban freight transport	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Greece	Serres	Serres.02	Spatial and temporal restrictions	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Greece	Serres	Serres.03	Urban logistics center	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Greece	Serres	Serres.04	New technology vehicles	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Greece	Serres	Serres.05	ICT E-platforms and collaboration between stakeholders in urban freight transport	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Greece	Serres	Serres.06	Routes optimization	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Greece	Serres	Serres.07	Night routes	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Hungary	Pécs	Pécs.01	Time limitation in car-free zones for deliveries	- CIVITAS, TrendSetter, Sustainable Urban Transport - Final report from the European project Trendsetter, 2006, page 32
Italy	Turin	Turin.01	Economic incentives to LNG vehicles	- Città di Torino, Piano Urbano della Mobilità Sostenibile – Linea di Indirizzo 3a, 2010, page 87 http://www.comune.torino.it/geoportale/pums/cms/images/files/misure/ALL3_schede_misura3.pdf
Italy	Turin	Turin.02	Van sharing	- Città di Torino, Piano Urbano della Mobilità Sostenibile – Linea di Indirizzo 3a, 2010, page 97 http://www.comune.torino.it/geoportale/pums/cms/images/files/misure/ALL3_schede_misura3.pdf

State	City	ID	Measure	Source
Italy	Turin	Turin.03	Rationalization of goods distribution in the urban area / Recognition scheme	- Città di Torino, Piano Urbano della Mobilità Sostenibile – Linea di Indirizzo 3a, 2010, page 104 http://www.comune.torino.it/geoportale/pums/cms/images/files/misure/ALL3_schede_misura3.pdf
Italy	Turin	Turin.04	Mobile depot	- https://www.tnt.com/express/it_it/site/home/Chi-e-TNT/Media-Relation/Comunicati-stampa/Mobile-Depot.html# - https://www.tnt.com/express/it_it/site/home/Chi-e-TNT/Media-Relation/Comunicati-stampa/Cargo-bike-Torino.html
Italy	Lucca	Lucca.01	Reinforcing the services provided by Luccaport	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Italy	Lucca	Lucca.02	Introducing a technological approach to loading and unloading bays	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Italy	Lucca	Lucca.03	Reinforcing the LTZ access regulation, following the principle "polluter pays"	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Italy	Lucca	Lucca.04	Enhancing the technologies supporting mobility (ICT solutions per LTZ access/exit control)	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Italy	Lucca	Lucca.05	Agreement with transport operators	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Italy	Lucca	Lucca.06	Cargo bikes	- MemEx, ENCLOSE project - SULP Portfolio, 2016
The Netherlands	s'Hertogenbosch	s'Hertogenbosch.01	Increase the activities of UCC	- MemEx, ENCLOSE project - SULP Portfolio, 2016
The Netherlands	s'Hertogenbosch	s'Hertogenbosch.02	Garbage collection efficiency	- MemEx, ENCLOSE project - SULP Portfolio, 2016
The Netherlands	s'Hertogenbosch	s'Hertogenbosch.03	Biogas filling stations	- MemEx, ENCLOSE project - SULP Portfolio, 2016
The Netherlands	Utrecht	Utrecht.01	Flexible access for cleaner freight traffic	- City of Utrecht, Taking a more sustainable approach to freight, 2013 - http://www.bestfact.net/wp-content/uploads/2016/01/CL1_078_QuickInfo_Cargohopper-16Dec2015.pdf

State	City	ID	Measure	Source
The Netherlands	Utrecht	Utrecht.02	City distribution by boat	- City of Utrecht, Taking a more sustainable approach to freight, 2013 - http://www.bestfact.net/wp-content/uploads/2016/01/CL1_151_QuickInfo_ZeroEmissionBoat-16Dec2015.pdf http://www.civitas.eu/content/city-distribution-boat
The Netherlands	Utrecht	Utrecht.03	Merchandise pick up points	- City of Utrecht, Taking a more sustainable approach to freight, 2013 - http://www.civitas.eu/content/merchandise-pick-points-mpup
The Netherlands	Utrecht	Utrecht.04	Construction logistics plan	- City of Utrecht, Taking a more sustainable approach to freight, 2013
The Netherlands	Utrecht	Utrecht.05	Distribution centers for bundling fresh and perishable food	- City of Utrecht, Taking a more sustainable approach to freight, 2013
The Netherlands	Utrecht	Utrecht.06	Clean route planning for freight transport	- http://www.civitas.eu/content/clean-route-planning-freight-transport
The Netherlands	Utrecht	Utrecht.07	Low emission zone	- MDS Transmodal Limited and Centro di ricerca per il trasporto e la logistica (CTL), DG MOVE Study of Urban Freight Transport – Final Report, 2012, p.87 - SINTEF Technology and Society, State of the art report. Urban logistics practises, 2012
The Netherlands	Utrecht	Utrecht.08	Dedicated unloading bays for goods delivery	- MDS Transmodal Limited and Centro di ricerca per il trasporto e la logistica (CTL), DG MOVE Study of Urban Freight Transport – Final Report, 2012, page 87
The Netherlands	Utrecht	Utrecht.09	Time, vehicle length and axle weight restrictions	- MDS Transmodal Limited and Centro di ricerca per il trasporto e la logistica (CTL), DG MOVE Study of Urban Freight Transport – Final Report, 2012, page 87
The Netherlands	Amsterdam	Amsterdam.01	*Voorkeursnet Goederenvervoer* - Freight dedicated routes	- Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013, page 53 - https://www.amsterdam.nl/parkeren-verkeer/luchtkwaliteit/slim-schoon-stad/voorkeursnet/
The Netherlands	Amsterdam	Amsterdam.02	Zero-emission furniture removal service	- http://www.bestfact.net/wp-content/uploads/2016/01/CL1_140_QuickInfo_AaddeWit-16Dec2015.pdf

State	City	ID	Measure	Source
The Netherlands	Amsterdam	Amsterdam.03	Goods delivery by cargo tram	- CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 45
The Netherlands	Amsterdam	Amsterdam.04	Use canals to transport goods	- http://www.bestfact.net/wp-content/uploads/2016/01/CL1_127_QuickInfo_MokumMariteam-16Dec2015.pdf
The Netherlands	Amsterdam	Amsterdam.05	Broadening of loading and unloading times	- SINTEF Technology and Society, State of the art report. Urban logistics practices, 2012
Norway	Trondheim	Trondheim.01	Establish an infrastructure of filling stations for biogas	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Norway	Trondheim	Trondheim.02	Testing hydrogen to fill in natural gas and biogas and establishing hydrogen filling station	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Norway	Trondheim	Trondheim.03	Common distribution to kindergartens, schools, health institutions and other offices in Trondheim Municipality	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Poland	Krakow	Kraków.01	Time window for freight deliveries and weight restriction	- MDS Transmodal Limited and Centro di ricerca per il Trasporto e la Logistica (CTL), DG MOVE Study of Urban Freight Transport – Final Report, 2012, page 68
Poland	Krakow	Kraków.02	Loading/unloading areas	- MDS Transmodal Limited and Centro di ricerca per il Trasporto e la Logistica (CTL), DG MOVE Study of Urban Freight Transport – Final Report, 2012, page 68
Poland	Krakow	Kraków.03	Mobility credits for regulating access and fostering sustainable mobility	- MDS Transmodal Limited and Centro di ricerca per il Trasporto e la Logistica (CTL), DG MOVE Study of Urban Freight Transport – Final Report, 2012, page 68
Poland	Krakow	Kraków.04	New goods distribution center	- CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 33
Portugal	Almada	Almada.01	Urban Consolidation Centre (UCC)	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Portugal	Almada	Almada.02	Pick-up Point (PuP)	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Portugal	Almada	Almada.03	Market area services	- MemEx, ENCLOSE project - SULP Portfolio, 2016

State	City	ID	Measure	Source
Portugal	Almada	Almada.04	Extension of the parking and logistics regulation	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Romania	Alba Julia	Alba Julia .01	Re-sizing road traffic areas	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Romania	Alba Julia	Alba Julia .02	Improve road traffic conditions	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Romania	Alba Julia	Alba Julia .03	Setting up local freight distribution centers	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Romania	Alba Julia	Alba Julia .04	Night deliveries	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Romania	Alba Julia	Alba Julia .05	Technological solutions	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Spain	Burgos	Burgos.01	Urban Consolidation Centre (UCC)	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Spain	Burgos	Burgos.02	Re-urbanization of the market area	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Spain	Burgos	Burgos.03	Eco-van sharing for city center shop owners	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Spain	Burgos	Burgos.04	Web-management for the non-labelled cars card system	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Spain	Burgos	Burgos.05	Last mile service for the city center: Park&Buy by bike	- MemEx, ENCLOSE project - SULP Portfolio, 2016
Spain	Burgos	Burgos.06	New goods distribution scheme	- http://www.civitas.eu/content/clean-vehicles-and-fixed-delivery-times - CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 38
Spain	Barcelona	Barcelona.01	DHL Urban Consolidation Centre in L'Hospitalet de Llobregat	- STRAIGHTSOL Project, Final Publishable Report, 2015
Spain	Barcelona	Barcelona.02	New concepts for the Distribution of Goods (on-street parking spaces converted in unloading spaces)	- CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 46 - Ajuntament de Barcelona, Urban Logistics in the Urban Mobility Plan of Barcelona context PMU 2013-2018, 2015, page 20 - SINTEF Technology and Society, State of the art report. Urban logistics practices, 2012

State	City	ID	Measure	Source
Spain	Barcelona	Barcelona.03	On-street loading and unloading areas	- Ajuntament de Barcelona, Urban Logistics in the Urban Mobility Plan of Barcelona context PMU 2013-2018, 2015, page 20
Spain	Barcelona	Barcelona.04	Time window for freight deliveries	- Ajuntament de Barcelona, Urban Logistics in the Urban Mobility Plan of Barcelona context PMU 2013-2018, 2015, page 20
Spain	Barcelona	Barcelona.05	Night deliveries	- Ajuntament de Barcelona, Urban Logistics in the Urban Mobility Plan of Barcelona context PMU 2013-2018, 2015, page 20 - SINTEF Technology and Society, State of the art report. Urban logistics practices, 2012
Spain	Barcelona	Barcelona.06	Building regulations for off-street delivery areas	- Ajuntament de Barcelona, Urban Logistics in the Urban Mobility Plan of Barcelona context PMU 2013-2018, 2015, page 20
Sweden	Malmö	Malmö.01	Satellite based traffic management for SME's	- CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 34 - http://www.civitas.eu/content/satellite-based-traffic-management
Sweden	Malmö	Malmö.02	Freight driver support	- http://www.civitas.eu/content/freight-driver-support
Sweden	Malmö	Malmö.03	Creation of new environmental zones	- http://civitas.eu/content/extending-environmental-zones-heavy-goods-vehicles
Sweden	Stockholm	Stockholm.01	Conduct a freight consolidation project	- Stockholm Stad, The Stockholm Freight Plan 2014-2017, 2014 - http://www.civitas.eu/sites/default/files/20120703_civitas_freight_measures_evaluation.pdf
Sweden	Stockholm	Stockholm.02	Conduct an off-peak delivery project	- Stockholm Stad, The Stockholm Freight Plan 2014-2017, 2014
Sweden	Stockholm	Stockholm.03	Commercial freight traffic operated in public transport lanes	- Stockholm Stad, The Stockholm Freight Plan 2014-2017, 2014
Sweden	Stockholm	Stockholm.04	Increase the number of loading zones for large freight vehicles with targeted supervision	- Stockholm Stad, The Stockholm Freight Plan 2014-2017, 2014

State	City	ID	Measure	Source
Sweden	Stockholm	Stockholm.05	Review lay-bys for heavy vehicles and their trailers in the outer districts	- Stockholm Stad, The Stockholm Freight Plan 2014-2017, 2014
Sweden	Stockholm	Stockholm.06	Conduct a technical project that involves loading zone sensors	- Stockholm Stad, The Stockholm Freight Plan 2014-2017, 2014
Sweden	Stockholm	Stockholm.07	Review existing regulations for commercial freight traffic	- Stockholm Stad, The Stockholm Freight Plan 2014-2017, 2014
Sweden	Stockholm	Stockholm.08	Widening of the Environmental zone	- CIVITAS, TrendSetter, Sustainable Urban Transport - Final report from the European project Trendsetter, 2006, p.35
Sweden	Stockholm	Stockholm.09	Congestion charging	- CIVITAS, TrendSetter, Sustainable Urban Transport - Final report from the European project Trendsetter, 2006, page 36
Sweden	Stockholm	Stockholm.10	Logistics center	- http://www.civitas.eu/content/optimising-freight-deliveries-construction-sites - CIVITAS, TrendSetter, Sustainable Urban Transport - Final report from the European project Trendsetter, 2006, page 44
United Kingdom	Dundee	Dundee.01	ECO-stars environmental fleet	- MemEx, ENCLOSE project - SULP Portfolio, 2016
United Kingdom	Dundee	Dundee.02	Web traffic information for lorry routing	- MemEx, ENCLOSE project - SULP Portfolio, 2016
United Kingdom	Dundee	Dundee.03	Electric vehicles adoption for the Municipality fleet	- MemEx, ENCLOSE project - SULP Portfolio, 2016
United Kingdom	Dundee	Dundee.04	Urban Consolidation Centre (UCC)	- MemEx, ENCLOSE project - SULP Portfolio, 2016
United Kingdom	Norwich	Norwich.01	Urban transshipment center	- CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 34 - http://www.civitas.eu/content/establishing-urban-transhipment-centre
United Kingdom	Norwich	Norwich.02	Priority access for clean goods vehicles	- CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 35

State	City	ID	Measure	Source
United Kingdom	Norwich	Norwich.03	Development of Strategic Freight Holders Club in Urban Areas	- CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 36 - http://www.civitas.eu/content/developing-strategic-freight-holders-club
United Kingdom	Norwich	Norwich.04	Goods delivery to Park&Ride sites	- CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 36 - http://www.civitas.eu/content/goods-deliveries-park-and-ride-sites
United Kingdom	London	London.01	Urban distribution center	- Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013, page 29
United Kingdom	London	London.02	Delivery and Services Plan	- Bruxelles Mobilité, Plan stratégique pour le transport de marchandises en Région de Bruxelles-Capitale, 2013, page 73
United Kingdom	London	London.03	Night time regulation (London Lorry Control Scheme)	- MDS Transmodal Limited and Centro di ricerca per il Trasporto e la Logistica (CTL), DG MOVE Study of Urban Freight Transport – Final Report, 2012, page 57
United Kingdom	London	London.04	Regent street retail consolidation center	- MDS Transmodal Limited and Centro di ricerca per il Trasporto e la Logistica (CTL), DG MOVE Study of Urban Freight Transport – Final Report, 2012, page 110
United Kingdom	London	London.05	Improve reliability of London deliveries and freight movement through regulations, design and best practice	- CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 26
United Kingdom	London	London.06	Promote modal shift through supply chain reconfiguration and planning changes where economically and environmentally practicable	- CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, page 26
United Kingdom	London	London.07	Construction Consolidation Centre	- CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, p.26 SINTEF Technology and Society, State of the art report. Urban logistics practices, 2012
United Kingdom	London	London.08	Low Emission Zone and congestion charging zone	- CITYLOG Sustainability and Efficiency of City Logistics, Trends of Urban Logistics in Europe 27, 2010, p.27 SINTEF Technology and Society, State of the art report. Urban logistics practices, 2012

State	City	ID	Measure	Source
United Kingdom	London	London.09	Use of battery-electric vans for retail distribution	- http://www.bestfact.net/wp-content/uploads/2016/01/CL1_067_QuickInfo_UK_GNEWT-16Dec2015.pdf