

# ***C-LIEGE - Clean Last mile transport and logistics management for smart and efficient local Governments in Europe***

---

**DELIVERABLE n. 4.2**

**C-LIEGE TOOLBOX FOR THE ESTABLISHMENT OF THE CITY LOGISTICS MANAGER**

**Dissemination level: PUBLIC**

---

**Workpackage n. 4**

**Version** Final

**Date of preparation** 31/05/2012

*The sole responsibility for the content of this deliverable lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.*

**Grant Agreement n. IEE/10/154/SI2.589407 – C-LIEGE**

## Document Control Sheet

Project	C-LIEGE: Clean Last mile transport and logistics management for smart and efficient Local Governments in Europe
Grant Agreement n.	IEE/10/154/SI2.589407
Document Title	Deliverable n. 4.2 - C-LIEGE toolbox for the establishment of the City Logistics Manager
Nature	D: Deliverable
Available languages	E: English
Dissemination level	Pu: PUBLIC
Version	FINAL
Date	31 <sup>th</sup> May 2012
Number of pages	106
Archive name	D4.2_C-LIEGE_Toolbox_for_CLM
Authors	Luca Lucietti (FIT)
Contributors	NCC, PARAGON, TIS-PT, NTUA, BERMAG, ITL
History	May 24 <sup>th</sup> 2012 – first draft May 30 <sup>th</sup> 2012 – peer-review May 31 <sup>th</sup> 2012 – final version
Keywords	Urban freight transport, Public Administration, transport demand management, push and pull measures, Mobility Manager, City Logistics Manager, baseline scenarios, Permanent Concertation Table, Recognition scheme, alternative delivery service, Memorandum of Understanding, ordinances, monitoring and evaluation, expected benefits.

## TABLE OF CONTENT

0. EXECUTIVE SUMMARY.....	4
1. THE KEY ROLE OF LOCAL AUTHORITIES IN URBAN FREIGHT TRANSPORT .....	7
2. PUSH AND PULL MEASURES REPOSITORY.....	10
2.1 Definitions.....	10
2.2 Complete list of push and pull measures.....	11
2.3 Push measures repository .....	13
2.4 Pull measures repository.....	21
2.5 Combination of push-and-pull measures repository .....	37
2.6 Soft measures selection.....	42
3. MOBILITY MANAGER AND CITY LOGISTICS MANAGER .....	47
3.1 Passengers transport demand management: the Mobility Manager .....	47
3.2 Freight transport demand management: the City Logistics Manager.....	50
4. THE ESTABLISHMENT OF THE CITY LOGISTICS MANAGER.....	55
4.1 Functions and roles of the City Logistics Manager .....	55
4.1.1 Definition and analysis of baseline scenarios .....	56
4.1.2 Set-up and operation of a Permanent Concertation Table.....	61
4.1.3 Definition strategies of intervention .....	64
4.1.4 Preliminary, definitive and executive planning of the UFT model.....	68
4.1.5 How to put in force the selected set of push and pull measures .....	77
4.1.6 Monitoring of the impacts resulting from implementation of the designed model .....	82
4.1.7 Communication activities .....	85
4.2 Training course of the City Logistics Manager.....	86
4.2.1 General objectives of the training .....	86
4.2.2 Specific targets .....	87
4.2.3 Methodology and work plan .....	89
4.2.4 Reference markets.....	92
4.2.5 Communication and quality .....	98
4.2.6 Training process for the City Logistic Manager .....	99
5. EXPECTED BENEFITS.....	104

## **0. EXECUTIVE SUMMARY**

The present document is devoted to the definition of a new figure addressed to plan and manage urban freight transport demand, the so-called City Logistic Manager (CLM).

The document will provide guidelines for the identification of a person able to perform the role of urban logistics manager through the definition of the main competence functions - in coordination with the Local authorities - explanation of how these functions can be implemented in order to pursue the target of rationalizing and optimizing goods distribution and collection in cities as well as to achieve an efficient, effective and sustainable goods delivery system with positive environmental, social and economic impacts.

This deliverable is aimed at providing a decision support tool for Local Administrations to plan, implement and monitor appropriate push and/or pull measures to achieve an integrated freight transport demand management and planning in urban areas and also to establish the functions and roles of CLM, which represents one of the main objectives of the project.

The role of Local authorities in urban freight transport (UFT) management and planning is initially summarized (Chapter 1) with a brief description on main tasks and functions of Municipalities in managing freight transport operations which are commonly organized by private stakeholders (e.g. producers, carriers, retailers, wholesalers, etc.).

By planning and implementing appropriate measures as access restrictions, optimization of routes, urban logistic plans, incentives and distribution plan-scheme, etc., Local authorities – for the subsidiarity principle – can influence the UFT market towards a cleaner, cost-efficient and energy saving freight transport in cities.

A complete set of push, pull and push-and-pull freight transport demand-oriented measures for energy-efficient and environmental-friendly UFT is provided in Chapter 2, as well as the definition, description and policy design of each measure, involved stakeholders, identification of possible barriers and drivers for success, timescale, innovativeness, and transferability potential of the measure.

“Push” measures are the ones that are imposed to freight operators with the purpose of influencing delivery and/or operational practices.

“Pull” measures are designed to encourage more sustainable and energy-efficient UFT by offering added-value services, facilities or incentives to operators and/or shippers.

“Push-and-pull” measures involve a combination of the two types of measures above, aimed at providing incentives for good practice whilst simultaneously using fiscal or technical disincentives to deter bad practices to be discouraged.

The identification and assessment of these measures is based on previous experiences and lessons learned by European, national and/or local initiatives and projects already implemented in the UFT sector which represented informative basis for the further generalization and standardization of each measure. Moving from successful European applications in cities and regions (as elicited in WP2), more general, transferable and stand-alone push and pull measures (structured in a complete database - O4.2) have been defined which are potentially applicable in areas with different peculiarities such as small-medium cities, urban areas with traffic congestion or air pollution problems, etc.

All the identified soft measures have been classified according to their area of impact.

This will allow to support decision makers within Local authorities in selecting the most appropriate measures on the basis of their impacts in the following areas: Environment (air and noise pollution), Energy (energy consumption), Economy (retailers, manufactures, residents), Safety and security (drivers and vulnerable road users), Transport efficiency (optimization and costs efficiencies), Land use and urban planning (city administrations).

The two key players of Mobility Management policies have been introduced (Chapter 3).

Mobility Manager (MM) or as in the UK Traffic Manager and the novel figure of CLM have been briefly presented highlighting possible synergies addressed to promote and establish functions and roles of the CLM in EU cities.

The profile of the CLM should match with the need to communicate with the diverse groups that are involved in the UFT: freight carriers, engineers, environmental and traffic technicians, elected officials, retailers and the public.

The function of UFT should be a major curriculum element in the new approach to transportation education. CLM is likely to have much more power to influence policies of Local authorities than private sector retailers and haulers.

CLM's role, main functions and tasks have been in-depth described (Chapter 4) by the definition of CLM's functions and "workflow" which includes baseline scenario definition and problem(s) identification, tailored soft measures identification and selection, consensus building and conflicts resolution activities, UFT system planning and implementation, monitoring and impacts evaluation, communication activities.

An ad-hoc training process addressed to educate this novel figure is provided. CLM is expected to become an UFT demand manager with the role of supporting Local authority in the development of energy-efficient UFT governance models integrated with the overall urban mobility.

The establishment of the CLM in cities represents the most important intermediate step towards new ideas for policy approach and strategy for joint passenger/freight transport in the urban environment, which represents one of the main drivers of the C-LIEGE project.

The information about the functions to be implemented and how these should be carried out, are indicated in this document and should be considered as reference guidelines subject to possible additional and/or alternatives solutions, including further proposals from major key local players who are, directly or indirectly, interested in the goods distribution process.

Indeed, the following guidelines have to be designed so that they can incorporate subsequent fine-tuning and adjustments to the specific site needs of the involved key actors, that may arise during the implementation phase of the preparatory activities for the definition of the optimal and efficient city logistics model for the specific urban context of application.

## 1. THE KEY ROLE OF LOCAL AUTHORITIES IN URBAN FREIGHT TRANSPORT

Local authorities have a number of relevant responsibilities in the transport field. Local authorities are usually responsible for parking policy, public transport planning and management (by controlled public transport companies), traffic management, mobility management, land use and urban design. Local authorities have usually an institutional role in the organization and development of passenger transport, but not in goods transport.

Nevertheless, local administrations can influence goods transport flows, including urban distribution. In most cities, urban freight transport (UFT) is perceived mainly as a problem of freight traffic, including parking and transport activities, environmental (noise, pollution), energy and safety issues. In common with all other areas, freight movement in urban environments is part and parcel of daily life, however in many cases the tensions between facilitating economic activity and the impacts on traffic and the environment are heightened due to the intensely competing demands evident in urban areas.

Urban areas, more than anywhere else, provide a high density of final destinations for goods and consequently, the immediate effect of an interruption to supply is comparatively transparent. The unique ability of road transport to move goods door to door has meant that for the present, and into the foreseeable future, it will dominate deliveries generally and urban deliveries in particular.

Goods vehicles are used for shops deliveries, restaurants, public houses, fuel to garage forecourts, office supplies, hospitals, schools and public buildings as well as the reverse logistics, such as refuse collection and disposal, street cleansing and maintenance.

The essential nature of goods vehicle deliveries and their contribution to economic activity should be valued accordingly. Policy makers should be more aware of the relevance of UFT for city economy and society. The importance of efficient and reliable access and movement for freight vehicles in urban areas should be recognised and accepted. However such activity often conflicts with the desire to maintain and improve the environment of the city centres.

With many actors involved it is difficult to tell who is responsible for the problem. The urban distribution of goods is organised by private stakeholders (e.g. producers, carriers, retailers, wholesalers, etc.), operating in an environment, the urban space, which is managed by public authorities.

Freight transport operations are mostly private, which means that they are rather efficient from an internal cost point of view, but not concerned with the external costs that they often generate. Attempts to control negative impacts of UFT usually results in considerable costs, which can be: loss of logistics efficiency for operators, supply constraints for shippers or receivers, investment costs in new infrastructures or vehicles, new coordination costs or costs related to new services.

Local authorities usually regulate essential areas of urban freight transport, mainly those referred with access restrictions (tonnage and size). By planning and implementing of measures as access restrictions, optimization of routes, urban logistic plans, innovative financing models, incentives and distribution plan-schemes, etc., Local authorities can influence UFT planning and management towards a more sustainable governance model.

Some city administrations, for instance, have implemented time windows restrictions for freight vehicles entering central areas for picking up/delivering goods at costumers' premises. Setting time windows requires co-ordination among residents, retailers and freight carriers. Development of less restrictive policies for goods delivery access, where appropriate, can generate substantial economic benefits for companies delivering to urban areas by enabling many freight companies to operate with fewer vehicles, therefore undertaking fewer journeys to deliver goods. There may also be environmental and traffic flow benefits to relaxing access restrictions due to a reduction in vehicle movement intensity.

In order to achieve a good environment for residents, Local Authorities are becoming more actively involved in co-ordinating conflicts among residents, retailers and freight carriers. It is important for all involved stakeholders to build consensus. Difficult issues have to be solved and when several actors have a voice one can face disputes. Local authority has to be a "mediator" in these discussions and negotiations. This approach of negotiations differs from majority rule decision making and everyone must agree on the final decision.

Cooperation amongst all involved stakeholders should be part of an urban freight transport policy (cooperation between public and private parties), particularly when public measures and policies are taken to influence UFT market towards sustainable models. By engaging relevant stakeholders, Local authorities can identify problems perceived by those relating to goods delivery in their cities, identify appropriate policies to resolve such problems and select effective measures to promote a cleaner, cost-efficient and energy saving UFT in cities.

Many examples exist of cases where freight operators have achieved benefits of open dialogue and working together with Public Authority towards shared solutions and approaches. There are cities, for instance, that have developed regulations on access restrictions (e.g. time windows, pricing, etc.) but allowing operators less strict restrictions if they use the consolidation centers to meet the load fill target and use environmental-friendly vehicles for good deliveries in city. This way both the city and the private sector benefit.

Local authority can reach consensus through a permanent round table to harmonize different views of the players involved in UFT and to find a way for a common strategy to achieve best practices in environmentally sensitive, economic, safe and efficient UFT.

Regular round tables involving all relevant stakeholders are very effective to discuss problems and implement city logistics initiatives in cities. Establishing such platforms for discussing urban freight and relevant problems is crucial for successful UFT models. After all key players have agreed on shared policies and measures, the next step is the implementation. Consensus building and conflict resolution will benefit all parts involved.

Freight Quality Partnerships (FQPs) can provide Local authorities with a means to formalise the consultation and the development of the work undertaken through round tables. The format of FQPs should be appropriate to the scale and type of perceived problems during round tables discussion, from region-wide to a partnership with an individual authority. Freight transport operators rarely work in close partnership with Local authorities. Indeed, many Local authorities acknowledge a lack of expertise gained through direct operational experience of freight. For these reasons partnerships designed to share knowledge of problems and to design and deliver suitable and shared solutions, can be particularly valuable. The partners of a FQP may therefore bring together knowledge, needs, funds and the power to deliver.

## 2. PUSH AND PULL MEASURES REPOSITORY

### 2.1 Definitions

Mobility Management is considered to encompass freight transport and measures concerning UFT are part of a mobility plan that also include passengers. Legislation, pricing incentives and disincentives are part of both passengers and goods mobility management.

*Mobility Management (MM) is a concept to promote sustainable transport and manage the demand for car use by changing travellers' attitudes and behaviour. At the core of Mobility Management are "soft" measures like information and communication, organising services and coordinating activities of different partners. "Soft" measures most often enhance the effectiveness of "hard" measures within urban transport (e.g., new tram lines, new roads and new bike lanes). Mobility Management measures (in comparison to "hard" measures) do not necessarily require large financial investments and may have a high benefit-cost ratio<sup>1</sup>.*

A **"Push"** measure is one that is imposed on operators with a view to influence delivery or operational practices. These can be divided into financial instruments (e.g. higher parking charges and road tolls) and technical and regulatory constraints (e.g. access restrictions). "Push" measures are closely related to more efficient and equitable transport pricing which seeks to require transport users (including freight operators) to bear a greater proportion of the real costs of their journeys, including costs of pollution, accidents and infrastructure.

A **"Pull"** measure is designed to encourage more sustainable and energy-efficient freight traffic by offering various additional services (eg, improved mapping), facilities (eg, preferential access to loading bays for "clean" vehicles) or incentives (eg, access to priority lanes) to operators or shippers. In many cases, the measures are combined with information and publicity campaigns designed to further reinforce the good practice measures.

**"Push" and "Pull"** measures involve a combination of the two, aimed at providing incentives for good practice whilst simultaneously using fiscal or technical tools to deter practices we wish to discourage.

<sup>1</sup> Source: The Definition of Mobility Management and the Categorisation of Mobility Management Measures as approved by the MAX-consortium and EPOMM, 2009.

## 2.2 Complete list of push and pull measures

The complete list of the push and pull measures for an energy-efficient UFT demand management and planning, is shown as follows.

<b>Measure n° 1:</b>	Local Freight Development Plans (LFDPs)
<b>Measure n° 2:</b>	Inclusion of Freight in Urban Mobility Plans
<b>Measure n° 3:</b>	Construction Logistics Plans
<b>Measure n° 4:</b>	Distribution Plans to reduce frequency of deliveries in public procurement
<b>Measure n° 5:</b>	Charging for distribution operations in central areas
<b>Measure n° 6:</b>	Delivery and Servicing Plans
<b>Measure n° 7:</b>	Free-to-use loading bays
<b>Measure n° 8:</b>	Free access to public transport lanes
<b>Measure n° 9:</b>	Changing traffic regulations to improve freight access
<b>Measure n° 10:</b>	Financial support for fleet conversion
<b>Measure n° 11:</b>	Enactment of access “time windows”
<b>Measure n° 12:</b>	Allocation of additional freight parking spaces
<b>Measure n° 13:</b>	Ad-hoc routes for freight distribution
<b>Measure n° 14:</b>	Time window restrictions
<b>Measure n° 15:</b>	Optimising leasing models for clean freight vehicles
<b>Measure n° 16:</b>	Real-time loading space booking
<b>Measure n° 17:</b>	Priority for lorries at selected junctions
<b>Measure n° 18:</b>	ICT support for eco driving
<b>Measure n° 19:</b>	Van sharing
<b>Measure n° 20:</b>	Collect points
<b>Measure n° 21:</b>	Pack stations
<b>Measure n° 22:</b>	Freight exchange
<b>Measure n° 23:</b>	Mobility credits
<b>Measure n° 24:</b>	Electronic access control
<b>Measure n° 25:</b>	Freight map for appropriate routes and vehicular restrictions

<b>Measure n° 26:</b>	Web-based market place
<b>Measure n° 27:</b>	Computer simulation demonstrating efficient distribution of goods
<b>Measure n° 28:</b>	Online routing tool
<b>Measure n° 29:</b>	Web promotion of sustainable city logistics
<b>Measure n° 30:</b>	Virtual Distribution Centre
<b>Measure n° 31:</b>	Web service to manage preferred delivery locations and times
<b>Measure n° 32:</b>	Algorithm to plan deliveries when unexpected events take place
<b>Measure n° 33:</b>	Systems for assessment of UFT impacts
<b>Measure n° 34:</b>	Signposting freight routes
<b>Measure n° 35:</b>	Environmental zones
<b>Measure n° 36:</b>	Freight Quality Partnership (FQP)
<b>Measure n° 37:</b>	Freight noise mapping
<b>Measure n° 38:</b>	Mobility Master Plans
<b>Measure n° 39:</b>	Technical guidelines for delivery spaces
<b>Measure n° 40:</b>	Freight Operators Recognition Schemes (FORS)
<b>Measure n° 41:</b>	Multi-user lanes
<b>Measure n° 42:</b>	Night deliveries
<b>Measure n° 43:</b>	Using building code regulations for off-street delivery areas
<b>Measure n° 44:</b>	Eco-driver training
<b>Measure n° 45:</b>	Access restrictions for polluting freight vehicles

## 2.3 Push measures repository

The complete list of the “push” measures is shown as follows:

<b>Measure n° 4:</b>	Distribution Plans to reduce frequency of deliveries in public procurement
<b>Measure n° 14:</b>	Time window restrictions
<b>Measure n° 23:</b>	Mobility credits
<b>Measure n° 24:</b>	Electronic access control
<b>Measure n° 35:</b>	Environmental zones
<b>Measure n° 37:</b>	Freight noise mapping
<b>Measure n° 42:</b>	Night deliveries
<b>Measure n° 43:</b>	Using building code regulations for off-street delivery areas
<b>Measure n° 45:</b>	Access restrictions for polluting freight vehicles

A brief description of the identified push measures is provided below.

### **Measure n° 4: Distribution Plans to reduce frequency of deliveries in public procurement**

- a) **Description of the measure:** Distribution Plans can be used to streamline deliveries of stationary and other goods to large public bodies that require large volumes of goods. By rationalising and consolidating the delivery process, economic and environmental benefits can be achieved.
- b) **Category of the measure:** Organizational (Alternative delivery systems), Awareness (Promotional and awareness campaigns), Governance (Distribution plan-scheme).
- c) **Policy design of the measure:** Initiated/supported by public administrations
- d) **Involved stakeholders:** Administrations, Freight carriers
- e) **Average time for the measure design and operation:** 6 to 36 months
- f) **Possible barriers:** n.a.
- g) **Innovativeness of the measure:** Use of an electric assisted trike is part of the services in Sutton. The electric assist trike is charged via 100% renewable energy. The delivery times in the afternoon and evening mean they are not contributing to congestion on the roads earlier in the day. This is an innovation in terms of local authority delivery methods in the UK.
- h) **Driver for success:** The new method of delivery provides a tangible example to

local residents and politicians of the benefits from sustainable delivery methods. Through making a modal shift to using bicycles for stationery deliveries in Sutton, the service demonstrates to residents and businesses the Council's commitment to Smarter Travel Sutton and One Planet Sutton. Furthermore, the deliveries are made to local politicians. As they are the decision makers, it is useful to demonstrate the delivery service to them before proposing plans to expand the service. The measure also provides a working example of zero and low emission local delivery.

- i) **Transferability:** Should be transferrable to many other public bodies, in respect of deliveries of less bulky goods (such as stationery).

#### Measure n° 14: Time window restrictions

- a) **Description of the measure:** This measure involves the use of time window restrictions to confine freight deliveries to certain hours, typically early in the day, in order to address congestion, traffic related air pollution and vehicle conflict in loading areas. This is particularly relevant in pedestrianised areas, where unrestricted access for deliveries can degrade the pedestrian environment. The use of time windows can also provide an incentive to use freight consolidation schemes.
- b) **Category of the measure:** Administrative (Access restrictions).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers, Shippers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible concertation and cooperation obstacles: May encounter resistance from shippers and freight operators, due to the perceived impact on their business model and anticipated delays in re-stocking outlets.
- g) **Innovativeness of the measure:** Time window restrictions of this kind have been used in a number of cities (e.g. Bristol, Amsterdam, Barcelona, Bologna, etc.)
- h) **Driver for success:** Active input and participation from all stakeholders.
- i) **Transferability:** Transferrable to any city where it is desirable to restrict deliveries to certain time windows in order to reduce the impact of UFT in city centres.

### Measure n° 23: **Mobility credits**

- a) **Description of the measure:** This measure involves introduction of a pricing scheme based on the mobility credits model in order to reduce high levels of congestion and pollution in busy city centres (especially historic centres with limited access and road space).
- b) **Category of the measure:** Financial (Mobility credits schemes, Congestion charging).
- c) **Policy design of the measure:** Initiated/supported by public-private partnerships.
- d) **Involved stakeholders:** Freight carriers, Shippers, Residents.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible concertation and cooperation obstacles: May be resistance from operators to the increased costs, Possible financial obstacles: Likely to be expensive to introduce, due to the technical requirements, Possible technical obstacles, Possible timeline obstacles.
- g) **Innovativeness of the measure:** This is an innovative measure, in which an initial budget of credits is given to every economic operator, in accordance with their needs, to be spent on freight distribution using vehicles either owned by the operator or by professional hauliers and couriers. Once the starting budget has been fully used, the economic operators may buy additional credits from the municipality. Access control equipment such as automatic number plate recognition technology, records each vehicle entering the controlled zone, allowing the implementation of a mixed pricing/enforcement scheme, depending on the users. Residents are entitled to enter after paying a yearly subscription fee; frequent goods vehicles are permitted to enter at specified times, depending on the accumulation of sufficient mobility credits or on payment of access charges; occasional goods vehicles will be allowed to enter at specified times subject to a road charge scheme; and other users are not permitted to enter and are fined for doing so (e.g. Genoa).
- h) **Driver for success:** 1) Active input and participation from all stakeholders, especially operators and municipal authorities, 2) Adequate budget to introduce the necessary technology.
- i) **Transferability:** Applicable to all municipalities but most applicable to historic centres, where access and road space is limited.

**Measure n° 24: Electronic access control**

- a) **Description of the measure:** This measure involves introduction of a pricing scheme based on the electronic access controls, in order to monitor and control traffic flows in city centres (e.g. historic centres with limited access and road space).
- b) **Category of the measure:** Financial (Mobility credits schemes, Congestion charging).
- c) **Policy design of the measure:** Initiated/supported by public-private partnerships
- d) **Involved stakeholders:** Freight carriers, Shippers, Residents
- e) **Average time for the measure design and operation:** 6 to 36 months
- f) **Possible barriers:** Possible concertation and cooperation obstacles: May be resistance from operators to the increased costs, Possible financial obstacles: Likely to be expensive to introduce, due to the technical requirements, Possible technical obstacles, Possible timeline obstacles
- g) **Innovativeness of the measure:** This is a innovative measure, in which an initial budget of credits is given to every economic operator, in accordance with their needs, to be spent on freight distribution using vehicles either owned by the operator or by professional hauliers and couriers. Once the starting budget has been fully used, the economic operators may buy additional credits from the municipality. Access control equipment such as automatic number plate recognition technology, records each vehicle entering the controlled zone, allowing the implementation of a mixed pricing/enforcement scheme, depending on the users. Residents are entitled to enter after paying a yearly subscription fee; frequent goods vehicles are permitted to enter at specified times, depending on the accumulation of sufficient mobility credits or on payment of access charges; occasional goods vehicles will be allowed to enter at specified times subject to a road charge scheme; and other users are not permitted to enter and are fined for doing so.
- h) **Driver for success:** 1) Active input and participation from all stakeholders, especially operators and municipal authorities, 2) Adequate budget to introduce the necessary technology.
- i) **Transferability:** Applicable to all municipalities but most applicable to historic centres, where access and road space is limited.

### Measure n° 35: Environmental zones

- a) **Description of the measure:** This measure involves restricting access to city centres for the heaviest and most polluting heavy goods vehicles, in order to reduce noise, congestion and other negative environmental impacts, and thus enhance the quality of life.
- b) **Category of the measure:** Administrative (Low Emission/Environmental Zone).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers, Residents.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible political obstacles: Local politicians may not support a measure which could prove controversial and unpopular. Possible concertation and cooperation obstacles: likely to be opposed by some freight operators, especially those with the oldest fleets. Possible financial obstacles: such a scheme may be expensive to introduce, for both the municipality and for operators. Possible timeline obstacles: due to the degree of consultation and preparation necessary to introduce such a measure, it is unlikely to be deliverable within short-medium timeline.
- g) **Innovativeness of the measure:** The measure is not innovative, as it has been applied in several other cities such as Utrecht, Lisbon, Aalborg, Burgos, London, Bremen, etc.
- h) **Driver for success:** 1) Strong political support as the measure may prove unpopular with some freight operators, 2) Sufficient budget to carry out the necessary signage and enforcement work, and (in some cases) to help fund vehicle replacement.
- i) **Transferability:** Applicable to all municipalities but, in practice, it is most relevant to large cities where there are significant air quality concerns.

### Measure n° 37: Freight noise mapping

- a) **Description of the measure:** Noise mapping is intended to identify areas where the noise burden caused by freight transport exceeds applicable EU regulations.
- b) **Category of the measure:** Organizational (Freight traffic noise mapping)
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** There are no significant obstacles to the mapping itself, but there may be various obstacles to the mitigation measures that may be required as a result of the mapping.
- g) **Innovativeness of the measure:** Innovative measure.
- h) **Driver for success:** Active input and participation from all stakeholders, plus sufficient funding to introduce proposed measures.
- i) **Transferability:** The measure can be replicated in any town/city where freight vehicle noise is a problem. Bradford (United Kingdom) is undertaking a range of similar policies to reduce the impact of freight noise within the city.

### Measure n° 42: Night deliveries

- a) **Description of the measure:** The objective of the night time delivery policy is to reduce daytime congestion by allowing night deliveries in city centre areas, using “quiet” trucks to conform with noise legislation.
- b) **Category of the measure:** Organizational (Alternative delivery systems).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Freight carriers, Shippers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible concertation and cooperation obstacles: Local residents may constitute an obstacle for night time deliveries, but this is not always the case (e.g. Barcelona). Good communication between shop owners, P.A. and residents is necessary when introducing night-time delivery schemes. Possible timeline obstacles.
- g) **Innovativeness of the measure:** This is an innovative measure, especially as other cities are seeking to restrict or ban night-time deliveries.
- h) **Driver for success:** Active input and participation from all stakeholders, including good communications with local residents.
- i) **Transferability:** Applicable to all municipalities.

### Measure n° 43: Using building code regulations for off-street delivery areas

- a) **Description of the measure:** This measure involves the use of building code regulations to ensure that new business premises provide adequate space for goods handling and storage. By ensuring that they have suitable off-street delivery areas or storage zones, this should reduce the number of on-street loading/unloading activities which can cause congestion and obstruction, generating a high number of delivery trucks and a heavy burden on public streets. Markets, bars and restaurants might be particularly appropriate for this measure, as they generate very frequent deliveries (especially for beverages).
- b) **Category of the measure:** Urban planning (Special urban planning conditions)
- c) **Policy design of the measure:** Initiated/supported by public administrations
- d) **Involved stakeholders:** Administrations, Shippers, Residents
- e) **Average time for the measure design and operation:** 6 to 36 months
- f) **Possible barriers:** Possible political obstacles: there may be political objections due to the increased costs for new businesses, especially at a time of economic austerity. Possible concertation and cooperation obstacles: businesses may object to the increased costs of providing dedicated storage/unloading facilities. Possible timeline obstacles: it is only possible to apply this measure in respect of new business premises (existing premises may simply not have space to comply with the requirements), therefore it is likely to be a considerable time before positive results are seen from the measure.
- g) **Innovativeness of the measure:** This is an innovative measure, involving the use of building regulations to reduce obstructions caused by loading/unloading vehicles. It is, however, a long-term measure which will not produce rapid results.
- h) **Driver for success:** Effective enforcement and political support
- i) **Transferability:** Not all cities have municipal markets. In some European countries, it is not legally possible to require shops or restaurants to reserve a percentage of their floor area for storage. This type of regulation would confront and limit freedom of commerce. In most countries, however, it is perfectly possible to oblige new commercial buildings to accommodate off street delivery areas within their premises. In Paris, for instance, all commercial buildings of at least 500 m<sup>2</sup> have to accommodate at least one off-street delivery area.

#### **Measure n° 45: Access restrictions for polluting freight vehicles**

- a) **Description of the measure:** This measure involves the introduction of access restrictions to town/city centres for the most polluting freight vehicles.
- b) **Category of the measure:** Administrative (Access restrictions).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Freight carriers
- e) **Average time for the measure design and operation:** More than 36 months
- f) **Possible barriers:** Possible timeline obstacles: this is, by its nature, a long-term project which is unlikely to deliver early improvements to the efficient UFT operation.
- g) **Innovativeness of the measure:** Similar to Low Emission Zones, which are in use in a number of locations.
- h) **Driver for success:** Adequate budget to carry out necessary signage and enforcement.
- i) **Transferability:** Applicable to all municipalities.

## 2.4 Pull measures repository

The complete list of the “pull” measures is shown as follows:

<b>Measure n° 1:</b>	Local Freight Development Plans (FDPs)
<b>Measure n° 7:</b>	Free-to-use loading bays
<b>Measure n° 8:</b>	Free access to public transport lanes
<b>Measure n° 9:</b>	Changing traffic regulations to improve freight access
<b>Measure n° 10:</b>	Financial support for fleet conversion
<b>Measure n° 11:</b>	Enactment of access “time windows”
<b>Measure n° 12:</b>	Allocation of additional freight parking spaces
<b>Measure n° 13:</b>	Ad-hoc routes for freight distribution
<b>Measure n° 15:</b>	Optimising leasing models for clean freight vehicles
<b>Measure n° 16:</b>	Real-time loading space booking
<b>Measure n° 17:</b>	Priority for lorries at selected junctions
<b>Measure n° 18:</b>	ICT support for eco driving
<b>Measure n° 19:</b>	Van sharing
<b>Measure n° 20:</b>	Collect points
<b>Measure n° 21:</b>	Pack stations
<b>Measure n° 22:</b>	Freight exchange
<b>Measure n° 25:</b>	Freight map for appropriate routes and vehicular restrictions
<b>Measure n° 26:</b>	Web-based market place
<b>Measure n° 27:</b>	Computer simulation demonstrating efficient distribution of goods
<b>Measure n° 28:</b>	Online routing tool
<b>Measure n° 29:</b>	Web promotion of sustainable city logistics
<b>Measure n° 30:</b>	Virtual Distribution Centre
<b>Measure n° 31:</b>	Web service to manage preferred delivery locations and times
<b>Measure n° 32:</b>	Algorithm to plan deliveries when unexpected events take place
<b>Measure n° 33:</b>	Systems for assessment of UFT impacts
<b>Measure n° 34:</b>	Signposting freight routes
<b>Measure n° 36:</b>	Freight Quality Partnership (FQP)
<b>Measure n° 40:</b>	Freight Operators Recognition Schemes (FORS)
<b>Measure n° 44:</b>	Eco-driver training

A brief description of the identified pull measures is provided below.

**Measure n° 1: Local Freight Development Plans (FDPs)**

- a) **Description of the measure:** LFDPs are co-ordinated plans designed to rationalise freight movements and deliveries. They can cover a wide range of measures, depending on the unique characteristics of each town/city.
- b) **Category of the measure:** Administrative (Access incentives, Advance booking (un)loading areas), Awareness (Promotional and awareness campaigns), Governance (Local Freight Development Plan (LFDP)).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Implementation barriers will vary depending on the extent of the local LFDP, the cost and nature of the measures.
- g) **Innovativeness of the measure:** Some LFDP measures may be relatively familiar, others (such as Bologna's use of an algorithm assigning to every pull-in area a "preference coefficient") are more innovative.
- h) **Driver for success:** 1) Active input and participation from all stakeholders, 2) Adequate budget to deliver plan measures.
- i) **Transferability:** LFDPs are applicable to all municipalities.

**Measure n° 7: Free-to-use loading bays**

- a) **Description of the measure:** Operators who meet certain criteria set by the city administration are offered free access to loading bays, offering an incentive towards the use of "cleaner" vehicles.
- b) **Category of the measure:** Administrative (Access incentives).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers, Shippers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:**
- g) **Innovativeness of the measure:** A number of schemes of this kind are already in place.
- h) **Driver for success:** Active input and participation from all stakeholders
- i) **Transferability:** Transferrable to any location

### Measure n° 8: Free access to public transport lanes

- a) **Description of the measure:** Freight vehicles are allowed free access to public transport priority lanes. In some cases, they must meet certain criteria set by the city administration to qualify for access, offering an incentive towards cleaner vehicles.
- b) **Category of the measure:** Administrative (Access incentives).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers, Shippers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible concertation and cooperation obstacles: there may be concern from bus operators that allowing other vehicles into priority lanes will slow down journeys and reduce reliability. Cyclists may be concerned about adverse effects on safety from allowing large lorries into priority lanes.
- g) **Innovativeness of the measure:** A number of cities already allow freight vehicles to use priority lanes.
- h) **Driver for success:** Active input and participation from all stakeholders.
- i) **Transferability:** Transferrable to any town/city where priority lanes are in place.

### Measure n° 9: Changing traffic regulations to improve freight access

- a) **Description of the measure:** Traffic regulations, such as one-way streets, are modified to ensure easier access and routing for freight vehicles, enabling more efficient planning of distribution routes. In some cases, they must meet certain criteria set by the city administration to qualify for access, offering an incentive towards the use of “cleaner” vehicles.
- b) **Category of the measure:** Administrative (Access incentives), Organizational (Freight traffic routing information), Awareness (Promotional and awareness campaigns, Freight Operators Recognition Scheme (FORS)), Governance (Distribution plan-scheme).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administration, Freight carriers, Shippers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible concertation and cooperation obstacles: There may be concern from other road users about adverse effects on safety from changing traffic regulations to facilitate easier access by freight vehicles (particularly large lorries).
- g) **Innovativeness of the measure:** n.a.
- h) **Driver for success:** Active input and participation from all stakeholders.
- i) **Transferability:** Transferrable to any town/city where it is feasible to change traffic regulations in this way.

### Measure n° 10: Financial support for fleet conversion

- a) **Description of the measure:** This measure involves the provision of financial support to accelerate the renewal of commercial and non-commercial fleets through a new incentive campaign targeting the acquisition of CNG, bio diesel and other low impact vehicles. Agreements can be signed with trade associations for their own fleet replacement and large scale promotion campaigns to encourage fleet renewal.
- b) **Category of the measure:** Awareness (Promotional and awareness campaigns).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers, Shippers, Residents.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible financial obstacles: due to EU State Aid regulations, it is not possible to give a direct financial contribution to assist in replacement of vehicles.
- g) **Innovativeness of the measure:** This is an innovative measure which has been trialled successfully in Ravenna, Italy.
- h) **Driver for success:** Active input and participation from all stakeholders.
- i) **Transferability:** Transferrable to any town/city where it is desirable to encourage a faster rate of vehicle replacement.

### Measure n° 11: Enactment of access "time windows"

- a) **Description of the measure:** This measure involves the use of access "time windows" aimed at making freight flows more efficient and reducing the impact on city centre traffic movements. In some cases, access may be restricted to certain types of vehicle, as an incentive to encourage clean, light and environmental-friendly vehicles.
- b) **Category of the measure:** Administrative (Access incentives).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Freight carriers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** n.a.
- g) **Innovativeness of the measure:** This is an innovative measure which has been trialled successfully in Ravenna, Italy.
- h) **Driver for success:** Active input and participation from all stakeholders.
- i) **Transferability:** Transferrable to any town/city where it is desirable to encourage the uptake of clean, light and environmental friendly vehicles.

### Measure n° 12: Allocation of additional freight parking spaces

- a) **Description of the measure:** This measure involves the allocation of additional freight parking spaces aimed at making freight flows more efficient and reducing the impact on city centre traffic movements. In some cases, access may be restricted to certain types of vehicle, as an incentive to encourage clean, light and environmental friendly vehicles.
- b) **Category of the measure:** Administrative (Access incentives).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** n.a.
- g) **Innovativeness of the measure:** This is an innovative measure which has been trialled successfully in Ravenna, Italy.
- h) **Driver for success:** Active input and participation from all stakeholders.
- i) **Transferability:** Transferrable to any town/city where it is desirable to encourage the uptake of clean, light and environmental friendly vehicles

### Measure n° 13: Ad-hoc routes for freight distribution

- a) **Description of the measure:** This measure involves the introduction of ad-hoc routes for freight distribution aimed at making freight flows more efficient and reducing the impact on city centre traffic movements. In some cases, access may be restricted to certain types of vehicle, as an incentive to encourage clean, light and environmental friendly vehicles.
- b) **Category of the measure:** Administrative (Access incentives), Organizational (Freight traffic routing information).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:**
- g) **Innovativeness of the measure:** This is an innovative measure which has been trialled successfully in Ravenna, Italy.
- h) **Driver for success:** Active input and participation from all stakeholders.
- i) **Transferability:** Transferrable to any town/city where it is desirable to encourage the uptake of clean, light and environmental friendly vehicles.

### Measure n° 15: Optimising leasing models for clean freight vehicles

- a) **Description of the measure:** Several providers already offer the opportunity to finance CNG vehicles by leasing. However, in some cases it has been found that the offers are not attractive due to risks in relation to residual value as well as to servicing and maintenance. This measure involves the development of leasing models that re-finance the higher investment costs for CNG vehicles by lower operating costs and relevant promotion programmes.
- b) **Category of the measure:** Financial (Vehicle financing models).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible technical obstacles: Requires the necessary infrastructure for large-scale operation of CNG vehicles to be in place.
- g) **Innovativeness of the measure:** This is an innovative measure aimed at promoting the greater take-up of “clean” CNG vehicles.
- h) **Driver for success:** Active input and participation from all stakeholders.
- i) **Transferability:** This measure has been successful in Berlin and is, in theory, transferrable elsewhere but may be more applicable to larger towns/cities where the necessary supporting infrastructure is in place.

### Measure n° 16: Real-time loading space booking

- a) **Description of the measure:** When freight vehicles are unable to use designated delivery spaces, because they are already in use or cars are illegally parked there, the drivers must park elsewhere on the public highway. Such stops have negative impacts on traffic flow, environment (by increasing CO<sub>2</sub> emissions) and on safety. Giving the driver the ability to book a delivery space before he reaches his delivery point will: increase the number of stops made in delivery areas, and decrease the level of double parking; reduce the negative impacts of double parking, as listed above; reduce driver stress, optimise delivery time operations, and significantly improve drivers’ work conditions. Depending on local preferences, access to the booking system could be restricted to operators who meet certain criteria – eg, truck fleets who implement speed limiters and provide eco-driving support to their drivers, or operators who are members of fleet recognition schemes
- b) **Category of the measure:** Administrative (Advance booking (un)loading areas).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers.
- e) **Average time for the measure design and operation:** 6 to 36 months.

- f) **Possible barriers:** Possible financial obstacles; this system require a high investment, including the cost of civil works, city parking toll machine, control software.
- g) **Innovativeness of the measure:** This is a technically innovative scheme that (when piloted in Bilbao) provides dynamic booking and re-scheduling delivery spaces, as part of an administratively innovative incentive scheme to reward truck fleets which implement speed limiters and provide eco-driving support to their drivers. If the vehicle is running late, the operator could re-assign a new delivery space according to the new time schedule, in order to keep the delivery area available for the other users. This measure will optimize the route for each vehicle, reducing the kilometres and number of stops that each vehicle performs.
- h) **Driver for success:** 1) Active input and participation from all stakeholders. 2) Adequate budget to implement the measure.
- i) **Transferability:** This measure should be transferrable to any town/city, where delivery vehicles are having difficulty accessing parking spaces.

#### Measure n° 17: **Priority for lorries at selected junction**

- a) **Description of the measure:** This measure will optimise the traffic control system to reduce heavy vehicle fuel consumption. The fuel consumption of a motor vehicle is determined by its speed and acceleration. In urban areas, speed is of lesser importance while acceleration, due to many stop-go cycles or slowing at intersections and roundabouts, is the main factor responsible for high fuel consumption. Optimising traffic control for maximum fuel efficiency would aim to minimise congestion and vehicle stops at signal-controlled intersections and roundabouts. The general idea is that cities will implement priority for trucks at certain junctions (on certain roads and/or certain times of day) and provide this priority as incentive to those truck fleets which comply with certain criteria, such as fitting of speed limiters, provision of eco-driving support to drivers, or membership of fleet recognition schemes.
- b) **Category of the measure:** Technical (Intelligent freight traffic routing).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible financial obstacles: May be significant costs involved to optimise traffic control systems so these priority measures can be introduced, Possible technical obstacles: Requires technical capacity to introduce traffic control measures of this kind.
- g) **Innovativeness of the measure:** This measure intends to locally improve coordination and avoid heavy goods vehicle stops through selective detection (by

size or by vehicle/fleet identity) and priority at individual signalised intersections. Whilst Urban Traffic Management and Control systems are in place in a number of municipalities, we are not aware of any which specifically give freight vehicles priority at junctions.

- h) **Driver for success:** Active input and participation from all stakeholders, plus technical capacity to introduce junction priority measures.
- i) **Transferability:** This measure is transferrable to any town or city, where the traffic control systems are capable of being adjusted to give priority to freight vehicles.

#### Measure n° 18: ICT support for eco driving

- a) **Description of the measure:** Acceleration, braking and gear-changing behaviour affects fuel consumption of freight vehicles. This measure provides direct technological support for an economic and environmentally friendly driving style.
- b) **Category of the measure:** Technical (IT logistics tools), Awareness (Eco-driving).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible technical obstacles: this project is not specifically focused on UFT. Possible timeline obstacles: this is, by its nature, a long-term project which is unlikely to deliver early improvements to the efficient UFT operation.
- g) **Innovativeness of the measure:** While driving, continuous information on accelerator position, instant consumption, average consumption and a general performance rating on eco driving level is provided to the driver. If one of the parameters has very low performance the driver receives a message requesting him to improve his behaviour in terms of fuel consumption.
- h) **Driver for success:** 1) Active input and participation from all stakeholders, 2) Adequate budget to carry out necessary research and design of ICT applications.
- i) **Transferability:** Applicable to all municipalities.

### Measure n° 19: Van sharing

- a) **Description of the measure:** The rationalisation of vehicle use by traders through the introduction of a van-sharing service. This is intended to address high levels of congestion and pollution generated by freight distribution (especially in historic city centres with limited road space) by optimising collection and delivery services.
- b) **Category of the measure:** Organizational (Alternative delivery systems), Awareness (Promotional and awareness campaigns).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Shippers
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:**
- g) **Innovativeness of the measure:** The measure appears similar to the widely-adopted concept of freight consolidation
- h) **Driver for success:** Active input and participation from all stakeholders
- i) **Transferability:** Applicable to all municipalities.

### Measure n° 20: Collect point

- a) **Description of the measure:** Collect points offer an alternative to home delivery, primarily for Internet shoppers. Collect points can be located in convenience stores, the main benefit of the service being the reduction in failed deliveries and the subsequent return of goods by couriers and postal services.
- b) **Category of the measure:** Organizational (Alternative delivery systems), Awareness (Promotional and awareness campaigns).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Shippers, Residents.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible concertation and cooperation obstacles: needs buy-in from a significant number of local residents to make the scheme viable. Also, Internet retailers need to be willing to deliver goods to a location which does not match the address of the purchaser. Possible financial obstacles: when piloted in Winchester, the scheme was found not viable commercially.
- g) **Innovativeness of the measure:** This is an innovative measure although the trial in Winchester was not very successful.
- h) **Driver for success:** 1) Support and participation from the general public, delivery companies and online retailers, 2) Adequate budget to install receiving points.
- i) **Transferability:** Applicable to all municipalities

### Measure n° 21: Pack station

- a) **Description of the measure:** Pack stations is an innovative solution beneficial to both customers and for online stores with the aim to provide a convenient delivery alternative for internet shoppers and avoid failed home deliveries by the conventional delivery practices.
- b) **Category of the measure:** Organizational (Alternative delivery systems), Awareness (Promotional and awareness campaigns).
- c) **Policy design of the measure:** Initiated/supported by private sector.
- d) **Involved stakeholders:** Shippers, Residents.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible concertation and cooperation obstacles: needs buy-in from a significant number of local residents to make the scheme viable. Also, Internet retailers need to be willing to deliver goods to a location which does not match the address of the purchaser. Possible technical and timeline obstacles.
- g) **Innovativeness of the measure:** Innovative measure
- h) **Driver for success:** 1) Support and participation from the general public, delivery companies and online retailers, 2) Adequate budget to install receiving points.
- i) **Transferability:** Applicable to all municipalities.

### Measure n° 22: Freight exchange

- a) **Description of the measure:** An online system designed to reduce back loading, by matching up freight vehicles due to make return journeys to a destination empty, with goods to be carried to that destination.
- b) **Category of the measure:** Organizational (Alternative delivery systems), Technical (IT logistics tools).
- c) **Policy design of the measure:** Initiated/supported by public administrations, Initiated/supported by public-private partnerships.
- d) **Involved stakeholders:** Freight carriers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** This measure requires co-operation between hauliers, which may not be forthcoming in a highly competitive operating environment. Hauliers may be unwilling to trust loads to a rival operator Possible financial obstacles: Need a secure mechanism for collecting and allocating payments between operators.
- g) **Innovativeness of the measure:** This is an innovative measure
- h) **Driver for success:** 1) Active buy-in from the freight sector, 2) Sufficient volume of traffic to justify the cost of setting up the scheme.
- i) **Transferability:** Transferrable to any municipality, where there is a sufficient volume

### Measure n° 25: Freight map for appropriate routes and vehicular restrictions

- a) **Description of the measure:** Reducing congestion and environmental impact of urban freight transport by better freight traffic routing information including details of height/weight restrictions
- b) **Category of the measure:** Organizational (Freight traffic routing information).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Freight carriers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible technical obstacles: The mapping is advisory so operators may not necessarily follow the suggested routes.
- g) **Innovativeness of the measure:** Not innovative, freight mapping is quite common
- h) **Driver for success:** 1) Active support from operators, 2) Adequate budget to carry out necessary research and mapping.
- i) **Transferability:** Applicable to all municipalities.

### Measure n° 29: Web based market place

- a) **Description of the measure:** This measure involves online promotion of sustainable logistics, in conjunction with an integrated online routing tool.
- b) **Category of the measure:** Technical (IT logistics tools), Awareness (Promotional and awareness campaigns).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:**
- g) **Innovativeness of the measure:** The measure aims to develop common European quality standards and processes for implementing and evaluating sustainable urban mobility plans while also including clear performance indicators of the reduction of energy use and CO2 emissions.
- h) **Driver for success:** Adequate budget to develop and promote the web portal.
- i) **Transferability:** Applicable to all municipalities.

### Measure n° 30: Virtual distribution center

- a) **Description of the measure:** An internet portal containing online information on the goods to be delivered to customers (address, the nature of the cargo volume, the type of packaging, etc.) and the transport company used to deliver the goods providing information on the availability of vehicles and their characteristics (the cargo compartment, etc.).
- b) **Category of the measure:** Technical (IT logistics tools), Awareness (Promotional and awareness campaigns).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers, Shippers.
- e) **Average time for the measure design and operation:** 6 to 36 months
- f) **Possible barriers:** Possible concertation and cooperation obstacles: shippers and operators may be unwilling to provide information, due to either shortage of time/staffing, or for reasons of commercial confidentiality. Possible technical obstacles: difficulty in obtaining the necessary information.
- g) **Innovativeness of the measure:** This is an innovative measure, in which the portal could be used to determine the minimum required number of vehicles needed to deliver goods for a specified period of operational planning (for example, the following day).
- h) **Driver for success:** 1) Mechanism for obtaining the necessary information from shippers and freight operators, 2) Adequate budget and staffing to design, host and upload information to the web portal.
- i) **Transferability:** Applicable to all municipalities.

### Measure n° 31: **Web service to manage preferred delivery location and times**

- a) **Description of the measure:** This measure involves the use of an online database to manage preferred delivery locations for recipients of freight consignments. Customers upload information about delivery locations, delivery profiles and time windows to the database, which serves as an information hub for delivery data, accessed by private customers and logistics service providers.
- b) **Category of the measure:** Technical (IT logistics tools).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Freight carriers, Shippers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible concertation and cooperation obstacles: Needs to be sufficient support from shippers to justify investment in the database.
- g) **Innovativeness of the measure:** An innovative measure whose aim is to improve the knowledge of the loading/unloading situation at shops or private customers (time windows, locations).
- h) **Driver for success:** Willingness of shippers to use the service.
- i) **Transferability:** Applicable to all municipalities.

### Measure n° 32: **Algorithm to plan deliveries when unexpected events take place**

- a) **Description of the measure:** This measure involves the use of an algorithm to plan delivery schedules for a vehicle fleet when there are sudden changes in traffic conditions.
- b) **Category of the measure:** Technical (IT logistics tools).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Freight carriers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:**
- g) **Innovativeness of the measure:** This is an innovative measure using an algorithm to plan delivery schedules for a vehicle fleet when there are sudden changes in traffic conditions. The algorithm is embedded into logistics application software, which provides data about the orders to be serviced, the objective function, and the characteristics of the vehicles' fleet.
- h) **Driver for success:**
- j) **Transferability:** Applicable to all municipalities.

### Measure n° 33: Systems for assessment on UFT impacts

- a) **Description of the measure:** This measure involves development of a transport planning model to enable the social costs of freight traffic (such as noise emissions) to be identified more precisely and a monetary value to be applied.
- b) **Category of the measure:** Technical (IT logistics tools).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible technical obstacles: whilst of social benefit, this project is focused on social impacts (such as noise reduction) rather than energy consumption and air polluting.
- g) **Innovativeness of the measure:** MOSCA FREIGHT (VISEVA-W) and the related MOSCA SUSTAIN are intended to integrate freight transport into available urban transport models, allowing for the more accurate modelling of urban freight traffic, and its social impacts to be more precisely identified. VISEVA-W is now integrated into the overall model structure of the VISEVA model for passenger transport demand and the VISUM model for traffic assignment.
- h) **Driver for success:** Adequate budget to carry out the necessary modelling work.
- k) **Transferability:** Applicable to all municipalities.

### Measure n° 34: Signposting freight routes

- a) **Description of the measure:** By better signposting of freight routes, freight movements become more efficient with reductions in congestion, pollution and noise.
- b) **Category of the measure:** Organizational (Freight traffic routing information)
- c) **Policy design of the measure:** Initiated/supported by public administrations
- d) **Involved stakeholders:** Administrations, Freight carriers
- e) **Average time for the measure design and operation:** 6 to 36 months
- f) **Possible barriers:** Possible technical obstacles: As the signposting is only advisory, there is no compulsion for operators to follow the suggested routes.
- g) **Innovativeness of the measure:** The measure is not innovative, as signposting has been applied in other cities.
- h) **Driver for success:** Funding to install the necessary signposting
- l) **Transferability:** It is transferable and exists in many cities.

### Measure n° 36: Freight Quality Partnership (FQP)

- a) **Description of the measure:** By bringing together a wide range of freight stakeholders on a regular basis, including operators, administrators, retailers, City Councils, Freight Shippers, trade associations, environmental groups and researchers, relevant urban freight issues and challenges can be analysed and action plans agreed.
- b) **Category of the measure:** Governance (Freight Quality Partnership).
- c) **Policy design of the measure:** Initiated/supported by public-private partnerships.
- d) **Involved stakeholders:** Administrations, Freight carriers, Shippers.
- e) **Average time for the measure design and operation:** 6 to 36 months
- f) **Possible barriers:** Possible financial obstacles: adequate funding is essential so that the Partnership can deliver tangible outcomes; without this, freight operators may lose interest in taking part.
- g) **Innovativeness of the measure:** The measure is not innovative, since Freight Quality Partnerships are in use in a number of other cities across Europe.
- h) **Driver for success:** Active input and participation from all stakeholders, plus sufficient funding to introduce proposed measures.
- i) **Transferability:** This measure is transferrable to any town or city.

### Measure n° 40: Freight Operators Recognition Schemes (FORS)

- a) **Description of the measure:** Fleet Recognition schemes are voluntary schemes, usually free to join, designed to provide recognition, guidance and advice to road transport operators. An assessment is carried out of a fleet's overall road transport operation to recognise levels of legal compliance, operational and environmental performance and those complying with the required standards are branded accordingly. They exist as a mechanism to drive up standards in the freight sector.
- b) **Category of the measure:** Awareness (Freight Operators Recognition Scheme).
- c) **Policy design of the measure:** Initiated/supported by public administrations
- d) **Involved stakeholders:** Administrations, Freight carriers, Shippers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible concertation and cooperation obstacles: operators and trade associations may be doubtful of the benefits of taking part, especially if the scheme operates on a voluntary basis with no compulsion to join. Possible financial obstacles: if audits are carried out to assess whether operators are compliant, funding must be found to carry out the audits.
- g) **Innovativeness of the measure:** FORS schemes, or similar, operate in a number of locations but are probably more applicable to larger cities.

- h) **Driver for success:** Need to convince the industry partners to participate in the scheme. Offer of market incentives to promote involvement.
- i) **Transferability:** The measure can be replicated in any city where there are sufficient freight operators accessing the city to justify investment in a scheme of this kind.

#### Measure n° 44: **Eco-driver training**

- a) **Description of the measure:** By more efficient driving, fuel savings and CO2 reductions can be achieved. This involves a series of training sessions such as presentations, vehicle checks, driver debriefs, demo drives, initial and assessed drives, knowledge test and final debrief. The progress of participants is recorded and each driver receives a written driver assessment and certificate on course completion.
- b) **Category of the measure:** Awareness (Eco-driving).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Freight carriers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible concertation and cooperation obstacles: Operators with smaller fleets may be unwilling to take drivers off the road for this type of training.
- g) **Innovativeness of the measure:** Eco-driving schemes are in place in a number of cities and some companies have been introducing eco driving training themselves, in order to save fuel.
- h) **Driver for success:** 1) Funding to implement the eco-driving programme, 2) Support from the freight sector.
- i) **Transferability:** Transferable to any municipality

## 2.5 Combination of push-and-pull measures repository

The complete list of the “push-and-pull” measures is shown as follows:

<b>Measure n° 2:</b>	Inclusion of Freight in Urban Mobility Plans
<b>Measure n° 3:</b>	Construction Logistics Plans
<b>Measure n° 5:</b>	Charging for distribution operations in central areas
<b>Measure n° 6:</b>	Delivery and Servicing Plans
<b>Measure n° 38:</b>	Mobility Master Plans
<b>Measure n° 39:</b>	Technical guidelines for delivery spaces
<b>Measure n° 41:</b>	Multi-user lanes

A brief description of the identified push-and-pull measures is provided below.

### **Measure n° 2: Inclusion of Freight in Urban Mobility Plan**

- a) **Description of the measure:** This measure aims to develop common European quality standards and processes for implementing and evaluating sustainable urban mobility plans, whilst also including clear performance indicators of the reduction of energy use and CO<sub>2</sub> emissions. By involving various selected and experienced mobility management experts and cities all over Europe in the collaborative research approach, experiences and knowledge regarding benchmarks, standards and energy savings are exchanged and disseminated.
- b) **Category of the measure:** Administrative, Financial, Organizational, Technical, Awareness, Governance, Urban planning.
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers, Shippers, Residents.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible technical obstacles: This project is not specifically focused on UFT. Possible timeline obstacles: this is, by its nature, a long-term project which is unlikely to deliver early improvements to the efficient UFT operation.
- g) **Innovativeness of the measure:** The measure aims to develop common European quality standards and processes for implementing and evaluating sustainable urban mobility plans while also including clear performance indicators of the reduction of energy use and CO<sub>2</sub> emissions.
- h) **Driver for success:** 1) Active input and participation from all stakeholders, 2) Adequate budget to carry out necessary research and collaboration.
- i) **Transferability:** Applicable to all municipalities.

### Measure n° 3: Construction Logistics Plan

- a) **Description of the measure:** By combining travel planning with a Good Neighbour Policy, and other possible measures such as Fleet Recognition, traffic and delivery management to new construction sites can be made more efficient, benefiting the economy and mitigating the social and environmental impact of major construction work.
- b) **Category of the measure:** Administrative (Access incentives), Organizational (Alternative delivery systems), Awareness (Promotional and awareness campaigns, Freight Operators Recognition Scheme), Governance (Distribution plan-scheme).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers, Residents.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:**
- g) **Innovativeness of the measure:** Schemes of this kind involve a number of recognised “good practice” measures used in cohesion.
- h) **Driver for success:** Active input and participation from all stakeholders.
- i) **Transferability:** Transferrable to any location where major construction work is likely to cause an increase in site traffic.

### Measure n° 5: Charging for distribution operations in central areas

- a) **Description of the measure:** To reduce the negative effects of goods distribution in city centres, it is proposed to develop distribution schemes which intervene on an administrative level rather than on logistical or technical levels. By varying costs to enter the city centre depending on the different types of vehicles and distribution needs, more sustainable and energy-efficient freight movement can be encouraged.
- b) **Category of the measure:** Administrative (Access restrictions, Access incentives), Financial (Mobility credits schemes).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers, Shippers, Residents.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible concertation and cooperation obstacles: operators of older vehicles, who are likely to face increased costs, will oppose the scheme, Possible financial obstacles: cost of setting up a charging infrastructure and the necessary enforcement.
- g) **Innovativeness of the measure:** There are a number of charging schemes in place elsewhere. However, the concept of varying costs to enter the city centre depending on the different types of vehicles and distribution needs is quite innovative.
- h) **Driver for success:** Active input and participation from all stakeholders.
- i) **Transferability:** Most applicable to larger municipalities, where congestion and air quality are a problem, and resources are available to implement a charging scheme.

### Measure n° 6: Delivery and Servicing Plans

- a) **Description of the measure:** DSPs involve local municipalities working with organisations across the city in question to develop and implement DSP frameworks to enable businesses to achieve efficiencies in deliveries.
- b) **Category of the measure:** Administrative (Access restrictions, Access incentives), Organizational ( Alternative delivery systems).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers, Shippers.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** n.a.
- g) **Innovativeness of the measure:** A number of schemes of this kind are already in place.
- h) **Driver for success:** Active input and participation from all stakeholders.
- i) **Transferability:** Transferrable to any location.

### Measure n° 38: **Mobility Master Plans**

- a) **Description of the measure:** Mobility Master Plans (MMPs) are intended to represent the global transport policy of a large municipality, including urban goods movements. MMPs aim to improve air quality and public health, promote accessibility and social justice, making cities more pleasant and increasing economic performance. In the UK, the equivalent document is the Local Transport Plan, drawn up by towns and cities, either individually or on a pooled basis.
- b) **Category of the measure:** Governance (Mobility/Transport Plans incorporating UFT)
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers, Shippers, Residents.
- e) **Average time for the measure design and operation:** More than 36 months.
- f) **Possible barriers:** Depending on the measures proposed in the Plan, there may be a range of significant obstacles, especially funding, in light of current austerity measures throughout the EU.
- g) **Innovativeness of the measure:** Many towns and cities have transport strategies/plans of this kind.
- h) **Driver for success:** Needs a close public-private collaboration to achieve Plan targets, a strong political will and sufficient staffing/funding within the municipality.
- i) **Transferability:** The measure can be replicated in any town/city.

### Measure n° 39: **Technical guidelines for delivery spaces**

- a) **Description of the measure:** These guidelines are designed to facilitate on-street deliveries, by giving specific metrics and rules when designing on-street delivery bays (avoiding piecemeal implementation, responding to individual shopkeepers' requests). The rules can be integrated into a software programme in order to have an automatic calculation of the number and size of on-street delivery bays needed.
- b) **Category of the measure:** Organizational (Delivery guidelines).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers, Shippers.
- e) **Average time for the measure design and operation:** More than 36 months.
- f) **Possible barriers:**
- g) **Innovativeness of the measure:** Various other towns and cities have introduced measures to streamline and simplify freight deliveries.
- h) **Driver for success:** Good support from the users of the delivery bays and transport companies' organisations.
- i) **Transferability:** The measure can be replicated in any town/city where there are issues of this kind.

### Measure n° 41: Multi-user Lanes

- a) **Description of the measure:** To optimise the use of available street space, multi-functional lanes are introduced. Using VMS (Variable Message Sign System) technology, lanes can be designated for varying types of traffic and/or parking at various times of the day, including a “slot” for goods deliveries.
- b) **Category of the measure:** Organizational (Multi-user lanes).
- c) **Policy design of the measure:** Initiated/supported by public administrations.
- d) **Involved stakeholders:** Administrations, Freight carriers, Shippers, Residents.
- e) **Average time for the measure design and operation:** 6 to 36 months.
- f) **Possible barriers:** Possible financial obstacles: Need for investment in VMS systems to regulate the multi-user lanes, plus necessary enforcement staff, Possible technical obstacles: Important to ensure that all users respect and obey the designated timeslots. Failure to effectively enforce the system will result in it being abused and ignored.
- g) **Innovativeness of the measure:** Although priority lanes are widely used, we are not aware of any other cities which operate timed multi-user lanes of this kind.
- h) **Driver for success:** Availability of necessary infrastructure. A legal basis must exist or can be adopted for designation of multi-user lanes. Effective enforcement is critical so that the measures are respected by all users, especially at the beginning.
- i) **Transferability:** The measure is replicable, but requires investment in VMS systems, signage and sufficient enforcement staff.

## 2.6 Soft measures selection

As previously described, Local authorities should initially identify problems perceived by engaged relevant stakeholders, relating to goods delivery in their cities, identify appropriate policies to resolve such problems and select effective push and pull measures to promote a cleaner, cost-efficient and energy saving UFT. Following the initial identification of objectives and relevant partners the process can begin. In practice one should conduct problem identification with all stakeholders, then collect information about the problem that is at hand and lastly seek appropriate and tailored solutions in order to overcome identified problems.

The suggested process is summarized as follows:

- 1) **Problem identification:** problems perceived by each stakeholder should be identified
- 2) **Information collection:** there may be a range of information collection necessary in order to make progress towards developing suitable UFT solutions and measures.
- 3) **Seeking solutions:** once problem(s) are agreed and relevant information collected, Local authority - in partnership with private stakeholders - have to find solutions and then deliver some or all of the potential solutions swiftly if momentum and interest is to be maintained. This should take the form of a package of identifiable measures or actions that encourage best practice in UFT balancing the environment, economy, energy, transport efficiency and safety, land use and urban planning.

The identified soft measures are classified according to their area of impact.

The different areas of impact's categories are provided as follows:

- a) **Environment** (air and noise pollution);
- b) **Energy** (energy consumption);
- c) **Economy** (retailers, manufactures, residents);
- d) **Safety and security** (drivers and vulnerable road users);
- e) **Transport efficiency** (optimization and costs efficiencies);
- f) **Land use and urban planning** (city administrations).

Every impact area includes the relevant measures which are expected having direct impacts in the field of environmental, energy, economy, safety and security, transport efficiency, etc.

**a) ENVIRONMENT**

<b>PUSH</b>	<b>PULL</b>	<b>PUSH-and-PULL</b>
Measure n° 4	Measure n° 1	Measure n° 2
Measure n° 14	Measure n° 7	Measure n° 3
Measure n° 23	Measure n° 8	Measure n° 5
Measure n° 24	Measure n° 9	Measure n° 6
Measure n° 35	Measure n° 10	Measure n° 38
Measure n° 37	Measure n° 11	Measure n° 39
Measure n° 42	Measure n° 12	Measure n° 41
Measure n° 43	Measure n° 13	
Measure n° 45	Measure n° 15	
	Measure n° 16	
	Measure n° 17	
	Measure n° 18	
	Measure n° 19	
	Measure n° 20	
	Measure n° 21	
	Measure n° 22	
	Measure n° 25	
	Measure n° 26	
	Measure n° 27	
	Measure n° 28	
	Measure n° 29	
	Measure n° 30	
	Measure n° 31	
	Measure n° 32	
	Measure n° 33	
	Measure n° 34	
	Measure n° 36	
	Measure n° 40	
	Measure n° 44	

**b) ENERGY**

<b>PUSH</b>	<b>PULL</b>	<b>PUSH-and-PULL</b>
<b>Measure n° 4</b>	<b>Measure n° 1</b>	<b>Measure n° 2</b>
<b>Measure n° 14</b>	<b>Measure n° 7</b>	<b>Measure n° 3</b>
<b>Measure n° 23</b>	<b>Measure n° 8</b>	<b>Measure n° 5</b>
<b>Measure n° 24</b>	<b>Measure n° 9</b>	<b>Measure n° 6</b>
<b>Measure n° 35</b>	<b>Measure n° 10</b>	<b>Measure n° 38</b>
<b>Measure n° 42</b>	<b>Measure n° 11</b>	<b>Measure n° 41</b>
<b>Measure n° 43</b>	<b>Measure n° 12</b>	
<b>Measure n° 45</b>	<b>Measure n° 13</b>	
	<b>Measure n° 15</b>	
	<b>Measure n° 17</b>	
	<b>Measure n° 18</b>	
	<b>Measure n° 19</b>	
	<b>Measure n° 20</b>	
	<b>Measure n° 21</b>	
	<b>Measure n° 22</b>	
	<b>Measure n° 25</b>	
	<b>Measure n° 26</b>	
	<b>Measure n° 27</b>	
	<b>Measure n° 28</b>	
	<b>Measure n° 29</b>	
	<b>Measure n° 30</b>	
	<b>Measure n° 31</b>	
	<b>Measure n° 32</b>	
	<b>Measure n° 34</b>	
	<b>Measure n° 36</b>	
	<b>Measure n° 40</b>	
	<b>Measure n° 44</b>	

**c) ECONOMY**

<b>PUSH</b>	<b>PULL</b>	<b>PUSH-and-PULL</b>
Measure n° 23	Measure n° 1	Measure n° 2
Measure n° 24	Measure n° 7	Measure n° 3
Measure n° 35	Measure n° 8	Measure n° 6
Measure n° 42	Measure n° 9	Measure n° 38
Measure n° 43	Measure n° 18	Measure n° 39
Measure n° 45	Measure n° 19	
	Measure n° 20	
	Measure n° 21	
	Measure n° 22	
	Measure n° 25	
	Measure n° 26	
	Measure n° 27	
	Measure n° 28	
	Measure n° 29	
	Measure n° 30	
	Measure n° 31	
	Measure n° 32	
	Measure n° 34	
	Measure n° 36	
	Measure n° 40	
	Measure n° 44	

**d) SAFETY AND SECURITY**

<b>PUSH</b>	<b>PULL</b>	<b>PUSH-and-PULL</b>
Measure n° 23	Measure n° 1	Measure n° 2
Measure n° 24	Measure n° 16	Measure n° 3
Measure n° 35	Measure n° 21	Measure n° 38
Measure n° 43	Measure n° 22	
Measure n° 45	Measure n° 25	
	Measure n° 26	
	Measure n° 30	
	Measure n° 32	
	Measure n° 34	
	Measure n° 36	
	Measure n° 40	
	Measure n° 44	

**e) TRANSPORT EFFICIENCY**

<b>PUSH</b>	<b>PULL</b>	<b>PUSH-and-PULL</b>
<b>Measure n° 23</b>	<b>Measure n° 1</b>	<b>Measure n° 2</b>
<b>Measure n° 24</b>	<b>Measure n° 16</b>	<b>Measure n° 3</b>
<b>Measure n° 35</b>	<b>Measure n° 18</b>	<b>Measure n° 6</b>
<b>Measure n° 42</b>	<b>Measure n° 19</b>	<b>Measure n° 38</b>
<b>Measure n° 43</b>	<b>Measure n° 20</b>	<b>Measure n° 41</b>
	<b>Measure n° 21</b>	
	<b>Measure n° 22</b>	
	<b>Measure n° 25</b>	
	<b>Measure n° 26</b>	
	<b>Measure n° 27</b>	
	<b>Measure n° 28</b>	
	<b>Measure n° 29</b>	
	<b>Measure n° 30</b>	
	<b>Measure n° 31</b>	
	<b>Measure n° 32</b>	
	<b>Measure n° 34</b>	
	<b>Measure n° 36</b>	
	<b>Measure n° 44</b>	

**f) LAND USE AND URBAN PLANNING**

<b>PUSH</b>	<b>PULL</b>	<b>PUSH-and-PULL</b>
<b>Measure n° 4</b>	<b>Measure n° 1</b>	<b>Measure n° 2</b>
<b>Measure n° 43</b>	<b>Measure n° 36</b>	<b>Measure n° 3</b>
		<b>Measure n° 38</b>
		<b>Measure n° 41</b>

### 3. MOBILITY MANAGER AND CITY LOGISTICS MANAGER

#### 3.1 Passengers transport demand management: the Mobility Manager

The European regulations concerning sustainable mobility, given the principle of subsidiarity delegating to Member States the adoption of regulations on urban transport, is mainly focused on the principle of improving fuels quality, on differentiating energy sources used in transport sector, on improving vehicles' emission standards and promoting good practices.

The sustainable mobility sector plans interventions and policies on mobility such as:

- projects that promote pedestrian, cycling and public transport;
- regulation of traffic and parking;
- encouragement of innovative and eco-friendly transport services;
- mobility management, city logistics and road safety actions;
- development of technological and ICT tools.

The **Mobility Management** promotes the introduction of policies and interventions aimed at managing the demand for mobility and consists of a set of measures aimed at improving the mobility of people, vehicles and goods in urban areas, which at the same time preserve and enhance the environment through innovative and environmentally friendly solutions. In its commonly established meaning at European level, Mobility Management is an approach to problems of mobility, basically oriented to **manage the demand, which develops and implements strategies to ensure efficient transport of people and goods, with regard to social, environmental and energy saving purposes.**

The discipline of Mobility Management is aimed at giving more centrality to demand government policies focusing on solutions that can be implemented in the short term.

Mobility Management aims to reduce the number of circulating private vehicles in favor of alternative means of transport, thus improving the accessibility to urban centers and decreasing the degree of concentration of polluting substances

The development and dissemination of sustainable mobility is the cornerstone of mobility management. The typical measures of mobility management can be defined as "soft", because they generally do not involve the construction of new infrastructure, but focus on initiatives of persuasion, concession and restriction, through the use of a set of support and awareness-increasing tools.

Three main lines of action can be identified as follows:

- persuasion, that is communication and awareness-increasing actions;
- granting, for example by giving incentives for the adoption of environmentally friendly vehicles, drafting agreements, offering discounts and services;
- restriction, for example to pay for car parking in the city center.

The three lines of action mentioned above are characterized, respectively, by:

- *persuasion*, identifying information and communication plans aimed at creating awareness of the problem and aimed at changing daily habits;
- *granting*, developing new services for citizens characterized by high added value of urban mobility and ecological values;
- *restriction*, discouraging private car use by individual drivers through policies of Park Pricing Road and Pricing or the Limited Traffic Zones (LTZs).

Mobility Management is a central activity with respect to the problems of urban mobility, both for Public Administrations and companies. In today's difficult economic climate, every municipality is seeking to better manage traffic movements in order to smooth traffic flow, reduce congestion and enhance the local economy.

In large and even medium-sized cities, it is increasingly the trend for one named individual to be charged with this duty. They may be called the **Mobility Manager** or (as in the UK) the **Traffic Manager**. In the UK, recognizing the economic impact of congestion, the government introduced the Traffic Management Act of 2004. Amongst its provisions was the requirement for cities to appoint a named Traffic Manager to "expeditiously manage the flow of traffic". The Traffic Manager has the challenging task of ensuring the most efficient use of limited

road space, taking into account the interests of car users, public transport, taxis, cyclists, pedestrians and, of course, goods vehicles.

In Italy, for example, two professional figures were introduced:

- a) the **Area Mobility Manager** (appointed by the municipality), which defines and coordinates the interventions in the jurisdiction area of the Public Authority (PA), with the task of connecting the municipal structure and the local transport companies, to assist companies in preparing home-to-work transport plans while collaborating to their implementation, to promote initiatives in the mobility area.
- b) the **company's Mobility Manager**, who must carry out the employee mobility plan, with the task of optimizing the movement of personnel through the systematic adoption of the "Home-to-Work Transport Plan", aimed at reducing use of individual private transport and at improving organization of timetables to limit traffic congestion.

In the scheme introduced in Italy, the Area Mobility Manager collects the needs of the individual company's Mobility Managers and develops strategies aimed at managing home-to-work mobility in its complex, facilitating the integration between "Home-to-Work Transport Plan" and municipal administration policies in a logic of network and modal interconnection.

The figure of the Area Mobility Manager, established at the Technical Office for Traffic of each Local administration (with the exception of smaller municipalities), has the important function of coordinating and intermediating between all the different parties involved.

The **main features** of the Area Mobility Manager are to:

- promote dissemination, training and guidance actions in the companies and organizations involved;
- assist companies in preparing "Home-to-Work Transport Plan";
- encourage integration between "Home-to-Work Transport Plan" and Local administration's policies;
- be responsible for corporate mobility of the pertaining body;

- check solutions, with the support of companies managing the local transport services, to improve services and their integration with complementary and innovative transport systems with low environmental impact;
- facilitate the dissemination and testing of car-pooling, car sharing, bike sharing, etc.
- provide technical support for the definition of criteria and procedures for the allocation of grants and incentives to sustainable mobility projects;
- promote the deployment of systems and means of transport with low environmental impact;
- monitor the effects of the implemented measures in terms of environmental impacts and decongestion of road traffic.

The technical and professional skills generally required for a Mobility Manager include:

- ability to manage human resources;
- legislative knowledge on the mobility sector;
- planning ability;
- deep knowledge of techniques to reduce travel costs and environmental impacts and to be constantly updated on possible innovations in the sector;
- interpersonal skills

### **3.2 Freight transport demand management: the City Logistics Manager**

When turning from the subject of people mobility demand management to the one related to goods mobility, the mobility of people and goods have in common:

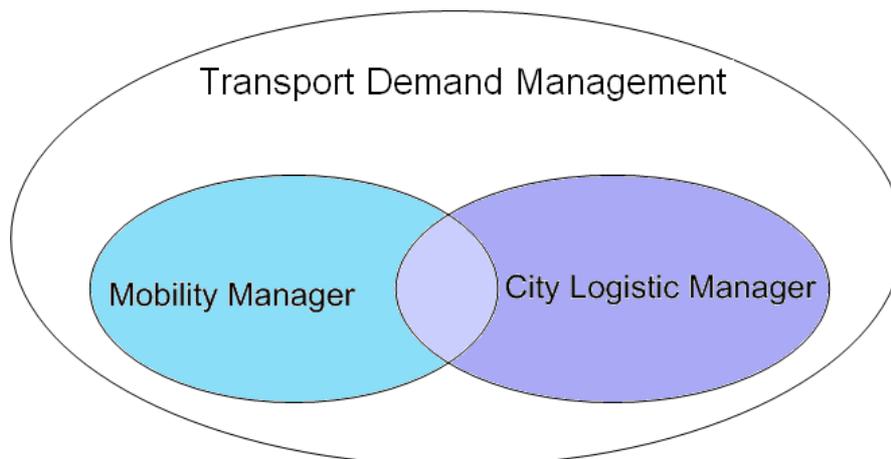
- generic spaces and vehicles;
- available time (24 hours x 7 days).

The mobility of people and goods is different, however, for:

- specialized spaces and vehicles;
- possible alternatives.

The Mobility Management, as already seen, means "management of the mobility of people and goods." This definition obviously creates the preconditions for the establishment of a figure similar to the Mobility Manager in Local authority (Area Mobility Manager in Italy), but more oriented to the mobility of goods in urban areas: the **City Logistics Manager (CLM)**.

The difference between the role of Mobility Manager and City Logistics Manager is that the Mobility Manager handles the movement of people, while the City Logistics Manager takes care of the movement of goods. The two roles, in fact, tend to get confused because it is not possible to create a clear separation between the two figures: they shall work together in the preparation of plans and transport models applicable to the reference urban context. For this reason, it would be correct to speak of Mobility Management referring to both the aforesaid figures, considering the interactions between the two them.



**Fig. 1 – Transport demand management: Mobility Manager and City Logistic Manager**

The CLM studies the ways to meet the demand for UFT in order to ensure the necessary level of service, while minimizing congestion, pollution, accidents and, possibly, transport costs. The City Logistics Manager should be responsible for **planning, managing and coordinating the traffic of goods in cities** with the aim of improving efficiency and effectiveness, in a perspective of environmental, economic, energy and social sustainability.

As the Mobility Manager studies the (public and private) vehicles' flow for transportation of people, so the City Logistics Manager studies of freight traffic flows that cross the city and generated by the demand goods receiving (e.g. trade, industry, etc.) and the provision of services (e.g., construction activities, artisans, postal services, etc.).

Both of them apply **management measures of the mobility demand** based on the:

- *persuasion*, to change behavior through activities involving information, consultation and consensus building;
- *granting*, developing new services and ecological systems of urban mobility (e.g. alternative delivery systems)
- *restriction*, respectively, by discouraging the use of private cars and more polluting goods vehicles with low load factors through road pricing policies and/or the introduction of Limited Traffic Zones (LTZs) and/or pedestrian areas.

The Mobility Manager and the City Logistics Manager represent a real intermediary between the various local stakeholders and the Public Body, whose task is to reconcile the needs and demands of the different companies, businesses and associations with those of the Public Administration and to select proposals for shared actions and plans.

As previously described, FQPs can provide Local authorities with a means to formalize the consultation and development work undertaken through round tables discussions. Taking the burden of administration and day-to-day management of progress of the FQP is often a considerable commitment and agreement as to who will take responsibility should be reached early in the process. It may well be that Local authority is the only partner that can, in practice, provide administrative support. The leadership must also be clear and proactive.

On the one hand a chairperson should be appointed in Local administration who has a clear understanding of the issues and the support of all the involved stakeholders. On the other hand Local authorities acknowledge a lack of expertise gained through direct operational experience of freight. For these reasons partnerships designed to share knowledge of problems and to design and deliver suitable and shared solutions, can be particularly valuable. The support of all these actors is important to achieve tangible results.

The best way to get their support is to understand and care for their needs and concerns and to get them involved throughout the whole process. Local authority should lead this process by the figure of the CLM. The introduction of CLM in major towns and cities could help to ensure that the needs of freight transport are more widely recognized and addressed.

Appointing the CLM as Chair of the FQP is a way of underlining the importance of the FQP and the commitment of the municipality. It also signals that the FQP will not merely be a body that talks about problems but that can be proactive in delivering tangible improvement measures. Consulting and engaging with stakeholders will be a key part of the CLM's role and therefore the FQP should be a "sounding board" and a first point of contact in respect of any initiatives being progressed by the CLM.

At the same time, however, many of the issues affecting freight movement – such as congestion and parking provision – also affect other road users. So the CLM would need to work closely with the Traffic Manager and/or Mobility Manager and other transport bodies to **find solutions that meet the needs of all modes of transport trying to access city centres**, especially in historic cities where there are tight physical limits on road capacity and parking space. Through partnership, better use can be made of road space in urban areas allowing both public transport and goods vehicles to operate more efficiently and sustainably

Local authorities usually have a traffic department, a town planning department and a construction department. In principle, the heads of these departments are key actors themselves or will name a key actor from their department. In a larger municipality there will likely be some general traffic and transport plan. The person who has put together the information for the plan will often be found on a much lower level than the decision makers, but will likely be the most knowledgeable person regarding all questions of available data and its interpretation. This person can help to activate all existing knowledge and will be a valuable debate partner in all transport related questions, including soft measures.

The municipalities often involve the environmental protection department and a department that deals with the interest of the citizens. Typically, neither one has a deeper understanding of UFT. Their role is to reflect the proposed measures against their aims.

A good relation of the CLM with the key players of these departments will therefore work as an early warning system regarding the feasibility of actions. Planners and engineers have to come to their jobs with new skills and, most important, new attitudes about how to create and maintain “the best transportation system possible.”

This approach includes generally recognized curriculum elements, such as urban planning and traffic engineering, as well as elements specific to urban freight movement, such as logistics. In this regards, the profile of the CLM would matches with the need to communicate with the diverse groups that are involved in the UFT: freight carriers, engineers, environmental and traffic technicians, freight carriers, retailers and the public. The function of UFT should be a major curriculum element in the new approach to transportation education.

In practice, the CLM is likely to have much more power to influence the policies of the local municipality than private sector retailers and haulers. For that reason, it is desirable that the CLM is based at the headquarters of the local municipal authority where he or she can liaise closely with the relevant Traffic Manager and Mobility Manager.

One important question is whether the CLM's remit should be restricted to road freight transport or should it also cover freight transport using other modes? Where a road, rail or water freight terminal is located within the city boundary, it would be logical for those facilities also to be part of the CLM's responsibilities.

A very important issue is the funding of the post. Funding would need to be found, not just for one year, but also over a longer period to enable effective long-term strategies in UFT to be put in place. On the presumption that establishment of a CLM would deliver benefits to freight recipients and operators, there may be a case for joint public/private funding of the post. It is recognized that, in today's difficult economic circumstances, securing funding by whatever means is likely to be difficult. A pragmatic, but not ideal, solution might be to designate an existing member of staff within Local authority, preferably someone with experience and/or knowledge in Mobility Management, freight transport and logistics.

## 4. THE ESTABLISHMENT OF THE CITY LOGISTICS MANAGER

### 4.1 Functions and roles of the City Logistics Manager

The CLM has the main task of rationalizing and optimizing goods distribution and collection in urban areas, in order to help reducing traffic congestion and air pollution levels making an efficient and effective UFT, with environmental, energy, social and economic advantages.

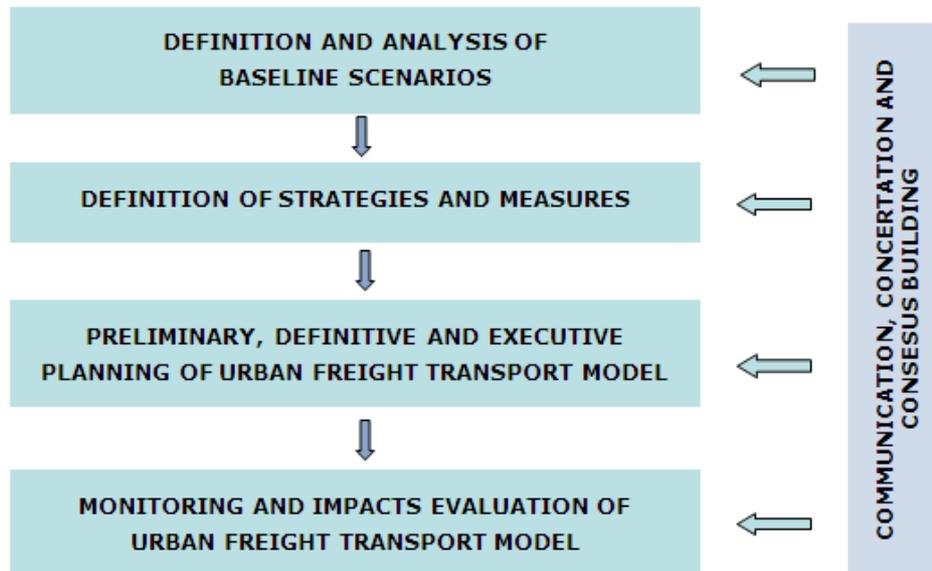
The role of the CLM is to manage freight transport demand in urban areas through:

- classification and analysis of the situation characterizing urban context;
- discussion and sharing with key local actors (e.g. trade associations, transport operators, traders, retailers, etc.) and institutions (e.g., Province, Region, etc.);
- definition of shared intervention strategies to apply to the surveyed urban context;
- preliminary, definitive and executive planning of the city logistics model;
- monitoring the impacts of the designed model.

There are legal requirements for the elaboration of strategic medium-long term plans relating to mobility and parking policies in urban areas, for example - in Italy - the Urban Mobility Plan, Urban Parking Plan, etc. There are reference figures in the urban mobility sector such as Local Public Transport Planner, monitoring private traffic, monitoring and management of the Limited Traffic Zones (LTZs), the Mobility Manager, etc. There are opportunities: to contact those responsible for logistics in companies/business units to create a community.

The CLM must act as binding agent and not as an additional function, as a subject expert able to identify the areas of impact of mobility and transport policies on the logistics chain and to formulate operative hypotheses based on his knowledge and vision of the sector.

The functional diagram and “workflow” on the functions of the CLM is presented below in which CLM represents the key player in a position to coordinate, implement and manage all relevant UFT planning and management activities in harmony with the various professionals responsible for managing the overall mobility at the municipal and supra-municipal level.



**Fig. 2 – Workflow related to the functions of the City Logistics Manager**

#### **4.1.1 Definition and analysis of baseline scenarios**

The first activity to be carried out by the CLM is represented by the definition of a knowledge framework on the goods transport demand and supply, currently existing in the surveyed urban context. The objective of this activity is to collect and analyze relevant information and data available, in order to build a complete cognitive picture of the phenomenon of the distribution of goods in cities. Upon completion of this activity, the CLM is responsible for planning, implementing and managing specific field surveys to integrate and complete the collected data in order to reconstruct the overall framework of the urban distribution of goods.

The objective is to outline and analyze the current freight transport demand (transportation and related prevalent logistics activities) in the urban area in its typical components and in its quantitative and territorial aspects while highlighting local needs, requirements, expectations, both by generators/attractors of goods demand flow (industrial, production, craft, service and trade aspects) and by freight operators (professional and own-account transport).

A city logistics solution is linked to the urban context in which it should be implemented, namely to the city planning and economical characteristics of the area under intervention and to the supply chain that are working in that area.

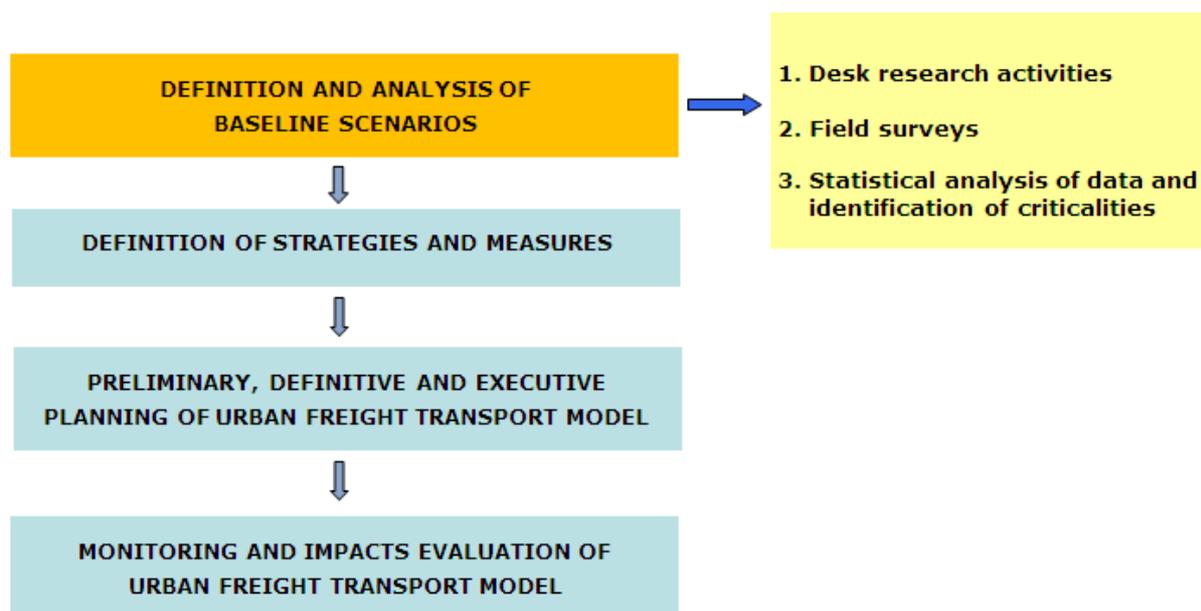
The design and execution of the activities necessary to define the reference framework should be subjected to the identification and **selection of zones/areas** of the city (e.g. city center, Limited Traffic Zones, pedestrian areas, area enclosed by the ring road network, etc.) and **logistics supply chains** (e.g. parcels, fresh retail, frozen chain, pharmaceuticals, etc.) on which it is intended to intervene to reorganize the distribution and collection of goods.

These should be identified on the basis of their representativeness/criticality with respect to the reference universe represented by the overall urban area and the combination of logistics supply chains. To this end, it is recommended to divide the surveyed urban area in homogeneous zones on the basis of city planning, economical and/or regulative characteristics (e.g. LTZs) and identify the more significant logistics supply chains, in terms of volume and weight of goods delivered and collected in the above mentioned areas.

This process will allow to define a **zone-supply chain matrix** in which, for every crossing of the zones-supply chain matrix, the total number of economic and productive activities relating to that specific logistics supply chain (located within the considered urban area) is identified in quantitative terms. The objective of this phase is to define, for every crossing of the zones-supply chain, the importance of the phenomena connected to the freight transport, measuring it allowing to compare easily several situations and contexts. The "zoning" of the urban area is made based on the parameters as above. In this activity two opposite requirements have to be balanced: on the one hand it is necessary to sub divide the city in order to create sufficiently homogenous zones with respect to the parameters highlighted above; on the other one the zones are the basic element for the surveys on the field.

The different work phases are given below, in a comprehensive manner:

- 1. Activities of desk research**
- 2. Field survey**
- 3. Statistical analysis of data and identification of criticalities**



**Fig. 3 – Definition and analysis of baseline scenarios: Actions**

⇒ **1. Desk research activities**

This work phase provides an in-depth and detailed desk research activities aimed at collecting, from certified and reliable sources, all documentation, information and data necessary to understand the current dynamics of the movement of goods in the investigated area. This activity involves the acquisition, study and elaboration of specific and inherent documentation and statistical information available by the competent Local Authorities, Institutes/Research Societies, Chamber of Commerce, Trade Associations, Universities, etc.

⇒ **2. Field surveys**

In order to complete and/or integrate the collected basic data and information, it may be necessary to carry out specific surveys for three main urban trade flows to be investigated:

- a) flow generators (commercial and production activities);
- b) transport and logistics operators (e.g. couriers, freight forwarders, etc.).
- c) freight vehicles in transit to major access points and road infrastructures.

a) Survey for flow generators

The survey for goods flow generators involves the submission of a questionnaire to a sample of economic activities (e.g. commercial, manufacturing, etc.) located within the investigated urban area. The sampling of the flow generators should allow selection of a group of statistically significant economic activities to be interviewed. The representativeness of the sample has to be guaranteed for every crossing of the zones-supply chain matrix, providing a sampling rate of at least 10% of the reference universe related to the specific urban area and logistics supply chain analyzed. The objective is to select the sample of businesses to be interviewed by securing, for every intersection between a single urban area (defined by a previous zoning action) and a single supply chain, a sample value not lower than 10% compared to the universe of activities related to that particular economic sector and located in that area. Obviously, the larger size of the sample the greater its statistical significance.

#### b) Survey for transport and logistics operators

The survey for transport and logistics operators (e.g. local freight transport companies and local offices) involves the submission of a questionnaire to a selected sample of organized freight operators dealing with the distribution of goods within the investigated municipal area.

This will enable the identification and analysis of structural-dimensional, economic-financial, technical, operational and organizational-functional aspects of freight transport and logistics services supply for the considered urban area of intervention.

#### c) Survey for freight vehicles drivers

The survey for freight vehicles crossing along the main access road corridors of the investigated area, envisages the realization of the following activities:

- automatic or manual counting of transiting vehicles;
- on-road interviews directly to transiting road transport and logistics operators through the submission of a questionnaire to the driver (sample surveys).

The survey is therefore to be articulated in counting freight vehicles transiting on the identified relevant road sections and a survey at the same sections by questionnaires submitted directly to the vehicles' drivers, in order to reconstruct the current volumes of commercial traffic and the characteristics of the provided logistics service. This will enable to reconstruct freight transport demand, related logistics and prevalent activities associated with

the identification and analysis of type, product and territorial features, as well as the technical-organizational modalities of the related issues, problems and expectations.

### ⇒ 3. Statistical analysis of data and identification of criticalities

Once all data and information necessary to reconstruct the current dynamics of the movement of goods within the investigated urban area have been collected through desk research activities and additional field surveys, these should be checked and standardized in order to carry out qualitative and quantitative statistical analysis allowing to draw a **comprehensive picture of the phenomenon and identify main bottlenecks** that characterize UFT related to the urban area and the supply chain considered in the analysis.

Such analyses should provide:

- a snapshot of the current needs of procurement and delivery of goods by businesses located within the surveyed area;
- a snapshot about the functional, organizational and managerial characteristics for a sample of professionals working in the transport and logistics sector;
- a reconstruction of the current commercial traffic volume characterizing the main access road corridors to the urban area considered in the analysis.

Once defined the overall framework for the reference context as above, the main problems that plague the current system of distribution of goods must be identified and analyzed with a specific focus on critical issues and constraints characterizing the service carried out by the main transport and logistics operators operating in the reference area.

Through the comparison between the characters of supply and demand - as emerging by the analyses previously completed and by outcomes of a Permanent Round Table - the critical and emerging needs and expectations expressed by all parties involved (demand and supply) in the goods distribution system can be identified and adequately explained.

The three work phases referred to above (1. Activities desk research, 2. Field Survey, 3. Statistical analysis of data and identification of critical points) will allow:

- analysis of demand for transport and delivery of goods (its structure and dimensions);
- analysis of the supply for transportation – freight carriers - and organizational models;
- definition of reference regulatory framework;
- analysis of the elements of sectorial planning;
- analysis of the existing technical and operational aspects of the logistics sector;
- analysis of critical issues, needs and expectations of key local actors in UFT.

On the basis of the reference scenario and the main problems identified, it will be possible to define the most appropriate **strategies of intervention** for the reference urban context.

#### 4.1.2 Set-up and operation of a Permanent Concertation Table

All actions and measures to be taken to ensure the gradual transition from the current system of urban distribution of goods to an innovative and sustainable model of city logistics must not preclude the requirements of "implementation simplicity" and must be sharable and therefore "metabolizable" by the relevant stakeholders. Since UFT measures relate to very different categories of stakeholders and complex issues, it would be wrong to think that these measures can be drawn out by a group of technical experts and implemented by the Local Administration (Municipality) without the direct involvement of users and/or stakeholders.

The objective of improving the efficiency of UFT can be reached when Public Administration (PA) is able to activate and coordinate a **Permanent Concertation Table** - through the support and coordination of CLM - with the main task of identifying and agreeing on measures and policies to be taken in order to effectively reorganize urban goods distribution.

The role of the Permanent Concertation Table is to provide an opportunity to open a dialogue between the representatives of trade associations and Local/Regional authorities, with the aim of involving all the stakeholders in decisions-making process regarding the reorganization of the overall UFT, identifying problems and urging actions to solve them.

Concertation activities are aimed at bringing together all the main local actors who, whether directly or indirectly, have an interest into the distribution process. Bodies working with the logistics sector as haulers and unions, industrial associations, local shopkeepers (either people or union representatives), technicians and politicians have to combine their thoughts into a common set of actions leading to concrete and sustainable results.

The role of the CLM is to support and coordinate the Local administration in the activation and coordination of the Permanent Concertation Table through:

- the identification and involvement of the main key local actors;
- managing and coordinating meetings between the members of the Table;
- selecting and encouraging relevant stakeholders to actively participate in the implementation of the reorganization of the urban distribution of goods.

The key players to be involved should be main relevant stakeholders, such as:

- Local Government;
- Associations;
- Transport Professionals;
- Other interested/involved Bodies.

It should be highlighted the need to have the support for the Permanent Concertation Table by actors able to adequately intervene and advise, facilitating the sharing of targets and information with PA and actively working to achieve **primary targets** as follows:

- identification of organizational and management interventions;
- identification of technical and regulatory actions;
- definition of measures and/or interventions to optimize the use of existing infrastructures and distribution system to rationalize the logistics process;
- definition of measures and/or interventions that correspond to actual conditions and needs related to mobility of goods in the reference urban context.

To this end it is necessary to hold regular meetings with the members of the Concertation Table (including freight transport professionals) during which any additional issues that may arise from significant new legislative, administrative, organizational and/or direct intervention to resolve any conflicts shall be considered. In order to build consensus and to prevent and manage conflicts, there may be the need to create intense and ongoing communication activities, through the implementation of preventive activity and media relations activities.

The Permanent Concertation Table offers the opportunity to discuss, share and create a UFT model that can materialize and formalize the cooperation between the key players involved by establishing a specific Agreement - between the Local Authority and the main actors involved in the logistics/distribution system - outlining a plan to reorganize the freight transport access to the city, aimed at promoting the implementation of the future models of city logistics, through the implementation of regulatory measures and incentives.

Starting from members of the Permanent Concertation Table, it is appropriate that Local Administration promotes, through coordination and support of the CLM, an medium-term agreement or memorandum of understanding among the parties (e.g. FQPs)

The Member States and European experience confirms the usefulness of formalizing and signing such an agreement in which the parties commit to take all initiatives and actions aimed at supporting the process of reorganizing the system of distribution of goods.

This agreement has the aim, among others, to establish the time and ways for gradual renewal of more polluting freight vehicles and to establish a series of progressive time restrictions for such vehicles, including establishment of specific time slots for loading and unloading goods.

### 4.1.3 Definition strategies of intervention

Based on the results and the main problems and needs emerged through the previous work phases and discussion phases within the Permanent Concertation Tables, the CLM is responsible for defining and proposing more effective and efficient measures (on the demand side) for the urban area selected for the reorganization of the goods transport and delivery.

Strategies of intervention have to lead to a more efficient management of the demand for urban haulage of goods. The collection and interpretation of the data set developed in the previous phases allow the CLM to better **plan and implement strategies of intervention to be adopted on the regulation and reorganization of the goods distribution system**, which will be designed and constructed in a the short-medium term.

Possible interventions to be implement in the short-medium term (e.g. 24 months) must necessarily be of organizational and management character and do not provide for assistance in infrastructure or technological interventions, as they require more extensive implementation time intervals and economic resources. For this reason, organizational and management measures, technical and regulatory interventions aimed at improving the efficiency of distribution of urban freight should be identified to optimize the use of existing infrastructures (nodes and corridors) and the system of logistics and mobility in urban areas.

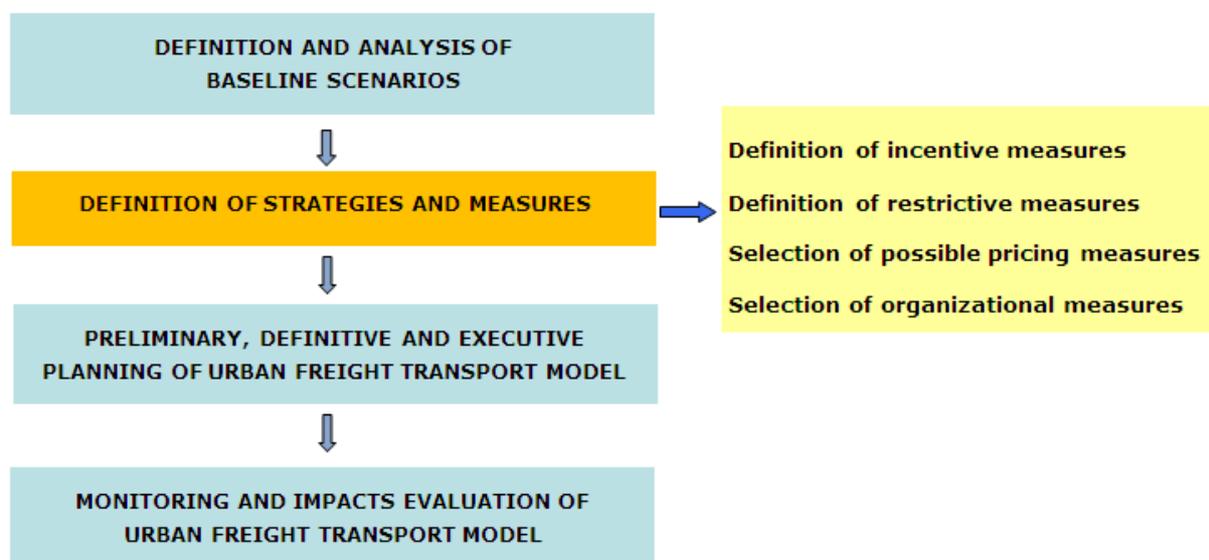


Fig. 4 – Definition of strategies and measures of intervention: Actions

It should be reminded that the decision maker - CLM - should carefully evaluate the choices to be taken, depending on the targets that the Public Administration wants to reach and has agreed on in advance with the members of the Permanent Concertation Table.

The types of intervention described below, allow to obtain different results depending on both different economic costs and of return on political image. The purpose of the interventions related to logistics in urban areas, must always **ensure the delivery of goods to commercial activities of the area subject to restrictive measures**, while allowing free competition without imposing a monopoly system to benefit some private companies.

If the purpose a reduction of indirect costs on society (such as environmental impacts related to traffic flow and the saturation of the area) it must be considered that the distribution by third parties (professional operators) is a large part of UFT market in terms of goods volumes, but at the same time, it is the portion that has less impact on accesses and traffic flows, compared to own-account and self-procurement distribution of goods.

The importance of undertaking targeted interventions and appropriate measures is immediately clear, with the aim of **moving portion of the freight traffic flows generated by own account operators, to third parties (professional operators) or alternatively transferring them onto a last-mile alternative delivery system** (so-called, for instance, "urban distributor of goods"), that can be promoted by PA.

Measures of intervention should then be discussed and shared with key stakeholders in local meetings during Concertation Tables, to agree on concerted action and shared policies and to avoid potential conflicts between main key players directly or indirectly involved in the goods distribution process in urban areas. The measures to be taken to enhance efficiency in economic, social and environmental terms the current UFT, have to necessarily be measures of a political-administrative and operational-logistics character.

**Political-Administrative** interventions (traffic regulations) lead to the definition of regulations in the access of freight vehicles in the selected urban areas as well as to the definition of economic regulations that can be translated, for example, into the introduction of access charge (road pricing). **Operative-logistics** interventions lead to promote a more efficient goods distribution model through the creation of more sustainable governance model in UFT.

These measures will act not only on aspects related to the mobility system, but also on trade's distribution network. It is necessary that public "direction" occurs through **systems of market regulation, characterized by a coordinated set of restrictive measures (*push measures*) and incentives (*pull measures*)** that must be consistent with the reference context and its identified criticalities.

The CLM is responsible for defining - according to the needs, problems and peculiar specifications that characterize the analyzed local context related to goods distribution process - coordinated and integrated measures of intervention to be discussed, shared and consolidated within the Permanent Concertation Table, as listed below:

- ⇒ **regulative measures in terms of incentives** (e.g. extension of time slots to access urban area, incentives for the adoption of ICT systems, incentives to purchase freight vehicles with low environmental impact, incentives for converting traditional freight vehicles to natural gas and/or LPG fuelled vehicles, etc.).
- ⇒ **regulative measures in terms of restriction** in accessing the city for vehicles used for purposes of delivery and collection of goods (e.g. restrictions on the time slots to access the city center, limiting times to load/unload, limiting access to some types of freight vehicles identified on the basis of the relative emission factors and/or weight, creation or extension of pedestrian areas and/or LTZs, access permissions, etc.);
- ⇒ **pricing measures** (e.g. payment to access a specific urban area, payment to transit on a specific road corridor, charging for parking, etc.).
- ⇒ **organizational measures** designed to create alternative distribution and eco-friendly systems (e.g. alternative delivery systems) to ensure continuity of good delivery and collection supply within the area subject to the types of measures as above.

Experiences at national and European level have shown that there are no unique and standard "rules packages" applicable everywhere, but each situation (city) must identify policies that are more responsive to their specific needs and their own mobility framework.

The optimal solution aimed at the reorganization of the urban distribution of goods will be represented not by the adoption of one of these measures - which would have a low impact on the distribution system as a whole - but rather by the implementation (where possible

under the constraints that characterize the local context) of the whole measures mentioned above to be applied in an integrated, coordinated and shared way with key local actors.

The CLM has the role to define - in cooperation with the Local authority - **regulative measures (restrictions and incentives) that are more appropriate for the local context of their application**, taking into account indications derived by consultation activities (round tables) designed to summarize interests and needs of the different stakeholders.

The incentive measures aim at overcoming the potentially coercive content typical of restrictive measures (including pricing measures), by replacing it with a system of benefits offered to certain categories of particularly “virtuous” operators in terms of environmental impact and logistics efficiency according to the concept of “certified” operator or company.

Regulative policies promoted by the CLM should be targeted - as a general principle - to rationalize the distribution of goods by operators that pollute more and that access with polluting vehicles a specific area several times a day. Conversely, operators who use vehicles with lower environmental impact and optimize their delivery routes (smaller daily average distance, increased number of deliveries per journey) should be facilitated, for example, in terms of extension of access time slots and/or transit possibilities - with due precaution – also in pedestrian areas and other protected urban areas.

Freight transport operators are generally reluctant to change their behavior and Local administration should adopt administrative measures to put constraints and restrictions on the distribution of goods in order to induce them to change their behavior.

Among the mentioned soft measures, the option should be considered to forbid access to heavy-duty vehicles, to more polluting freight vehicles that do not have a high load saturation, and/or to significantly reduce the time slots to enter the city and some corridors. The given examples of possible limitations can effectively promote the use of alternative distribution systems, possibly promoted by Local authority. Operators may find little advantage in renewing their fleet of vehicles or changing their behavior to gain access to the city and carry out the delivery of goods in these “restricted” areas.

It is necessary to establish clear, lasting and locally shared rules to access the city for people and goods in a non-coercive way, but rather through **the concept of recognition scheme (“accreditation”)** open to all, according to rules that provide optimized loads, vehicles

**with low or zero environmental impact, tracking of vehicles and goods, safety and security, respect of contractual conditions envisaged by respective sector's contracts.**

This type of approach arises in particular by the need to have a greater impact in terms of reduction of fragmented freight transport (own account) that generally appears to be characterized by low vehicle's loading coefficients, by hardly significant volume of handled goods compared to the number of circulating vehicles and by excessive use of the public spaces (e.g. roads, loading/unloading areas) causing system inefficiencies for urban mobility.

The function of the CLM is to define appropriate soft measures that, affecting organizational aspects of freight transport and logistics companies and economic operators, will be able to rationalize and optimize the whole process, defining specific standards of efficiency and efficacy related to both procedures and vehicles used for distribution and collection of goods.

#### **4.1.4 Preliminary, definitive and executive planning of the UFT model**

Once defined and analyzed the reference framework, identifying the main problems and needs that characterize the freight transport system in urban area and, finally, defined possible measures of intervention, the CLM is in a position to develop in an articulated and structured manner the issues related to the **feasibility of a new model for UFT (city logistics model)** that Local administration can then implement, monitor and evaluate.

In this phase it is needed to define the aspects of greatest interest in establishing a model of distribution system in urban area, seeking to identify the importance and relevance of each step that leads to the reorganization of the logistics system.

It should be clear that for this purpose it is not always necessary to achieve an alternative distribution system to the one operating in the city, since the analysis of flows, field surveys to operators and traders, together with evaluation of the pollutants, should provide evaluations of the overall distribution system in terms of efficiency and functionality in the area of interest, identifying such overall assessment parameters to allow the CLM to indicate Local authority the most appropriate and effective measures to local needs.

The analysis of the distribution system in use and the possible scenarios (cause-effect) that would occur, depending on the choice that is taken to solve the problems of goods distribution, is one of the inputs that, together with the political commitment, represent the overall decision making set. The creation of a new form of cooperation between the various players in the supply chain and responsible for the delivery/collection of goods, offers the possibility of significantly reducing the number of journeys made and the number of vehicles used to make deliveries, with subsequent reductions of environmental and energy impacts.

The aim is to promote the creation of spontaneous organizations of the distribution system, designed to homogenize distribution of goods for specific logistics supply chain, in order to concentrate on freight vehicles with greater efficiency and less environmental impact on the city's traffic and livability. It is important to **promote and encourage the outsourcing of the last mile delivery** with the objective of reducing own-account freight transport (self-procurement operations) through a gradual but progressive restriction of accesses (based on emissions, weight of vehicles, load factors, etc.), for fragmented and inefficient operators.

In order to encourage the creation of such models and **intervene effectively on the freight transport demand through a UFT market regulation** towards levels of efficiency, energy saving, environmental friendliness and safety, the possible measures of intervention are:

- ⇒ **restrictive measures** (*pull measures*) – political/administrative interventions
- ⇒ **restrictive measures** (*push measures*) – political/administrative interventions
- ⇒ **pricing measures** (*push measures*) – political/administrative interventions
- ⇒ **organizational measures** designed to create alternative distribution systems (*push-and-pull measures*) – operative/logistics interventions

It is necessary that the action taken by PA - assisted by the CLM - is carried out through systems of market regulation, characterized by a set of coordinated push and pull measures, consistent with the reference context, its weaknesses and its specific needs.

An efficient pricing system should encourage the rationalization of the distribution process by more polluting logistics operators that accesses several times a day the reference area, increasing pollution and congestion in the city. Conversely, operators that use vehicles with

low environmental impact and optimize delivery journeys should instead be facilitated in terms of reducing cost of license, extended access time slots and/or use of reserved spaces.

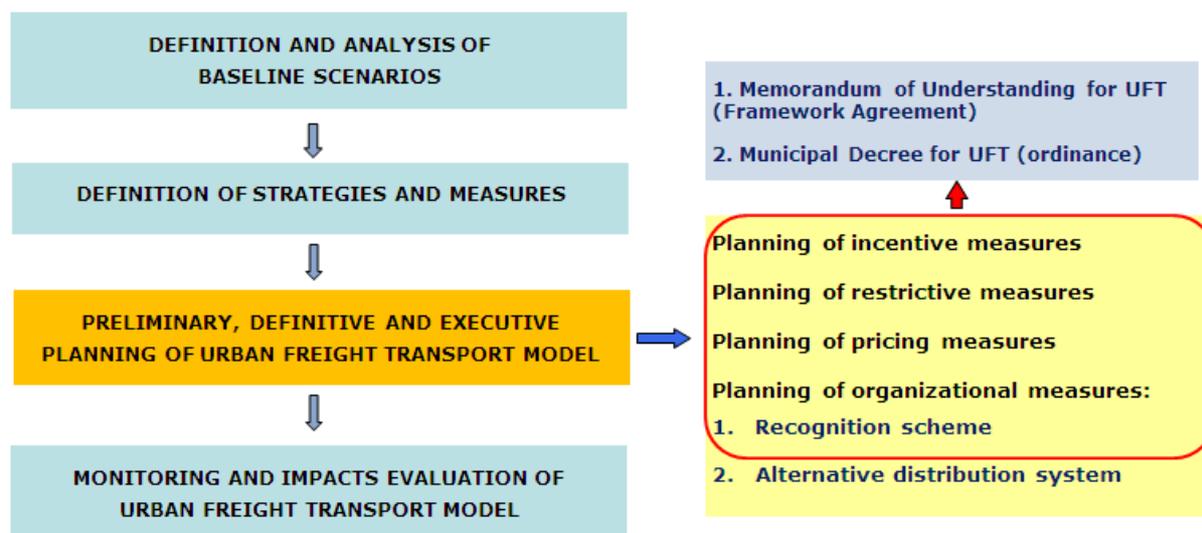


Fig. 5 – Preliminary, definitive and executive planning of the UFT model: Actions

⇒ **Incentive measures** (*pull measures*)

The CLM will develop and plan, by consultation activities with the PA and relevant stakeholders engaged within the Permanent Concertation Table, the possible set of **incentives** for "virtuous" ("certified") operators, including, for example, the following ones:

- access and parking benefits to deliver and/or collect goods (e.g. extension of access time slots, use of bus lanes, etc.).
- reducing the cost of permits for freight vehicles accessing in the city center;
- benefits to carry out loading/unloading operations (e.g. use of reserved areas);
- incentives for freight vehicles fleet conversion;
- possibility to use equipped logistics platforms with the function of urban distribution centers (UDCs).

⇒ **Restrictive measures** (*push measures*)

At the same time, the CLM will define and schedule, in agreement with the PA and relevant stakeholders engaged within the Concertation Table, the possible set of **restrictions** for operators working with quality and quantity efficiency standards lower than those that might be established in the **recognition scheme** to be recognized as a "certified" operator.

These restrictions will have to relate primarily to regulations on circulation and parking of freight vehicles in the reference area, by defining the emission characteristics of vehicles to be subject to limitation and timing of entry into force of the limitations themselves, possibly by banning access and parking for certain types of freight vehicles within an agreed timeframe.

The owners of vehicles used for pick-up and delivery of goods included in the groups of vehicles as above, will have the following possibilities to access restriction area as follows:

- a) to replace, within a certain period of time - to be discussed and agreed in the Permanent Concertation Table - vehicles used for goods delivery purposes that are among the groups subject to limitations as might be defined in the recognition scheme in order to gain access to reference area for pick-up and delivery of goods;
- b) to replace, within a certain period of time vehicles used for goods delivery purposes that are among the groups subject to limitations as the previous point a) and, at the same time, to become compliant with the recognition scheme in order to gain access to reference area under favored conditions ("rewarding of use"), taking advantage of the favorable conditions that may be provided for by the Local authority;
- c) to accept, if no replacement of vehicles is carried out within the established period of time, to use the services of "certified" operators for urban goods distribution or a possible alternative delivery service (environmental-friendly delivery service) having the function of "urban distributor of goods" focused on ensuring continuity of delivery and procurement of goods within the area subject to such provisions and regulations.

⇒ **Pricing measures** (*push measures*)

The CLM may, finally, define and propose to the Local authority possible **pricing measures**, including, for example, the following ones:

- Road pricing in terms of single road pricing (paying to transit on a given area) or area pricing (paying to access a specific area);
- parking pricing, i.e. charging for parking.

This type of measures consists in the payment of a fee to obtain right of access and/or parking within a limited urban area. This system, tested in some European cities but only a few of them actually adopted it (e.g. London), was born with the spirit of discouraging private transport in favor of an adequate integrated public transport service.

The costs for accessing these areas, quantified on the basis of different parameters identified by the Local government according to a predetermined level or in agreement with the Central government, should provide an income for the urban mobility system and should be used for capital expenditures and revisions of the passengers and goods mobility system. The local government still runs a considerable risk in an operation like this. If the access fee is not clearly used to improve the transport system in urban areas (from reorganization to restructuring and inclusion of new services), the loss in popularity and dissatisfaction of the citizens and local actors would lead to the necessary elimination of the excise duty, due to the risk of non-confirmation in the next election.

⇒ **Organizational measures** for development of alternative distribution systems (*push-and-pull measures*)

All possible systems are intended to reorganize the logistics in urban areas, such as distribution operations for third parties within areas with special restrictions or traffic limitations. The function of the CLM, as previously seen, is to define a possible **set of soft measures that, having impacts on organizational aspects of companies and economic traders, are able to rationalize and optimize the UFT processes.**

The solutions to be developed by the CLM, in agreement with the PA and relevant stakeholders engaged within the Permanent Concertation Table, are as follows:

1. **Recognition scheme.**
2. **Set-up alternative delivery service in competition with other freight operators.**

These **alternative distribution systems have to be accompanied by the introduction of regulative measures** (restrictive measures and incentives), as previously shown, to regulate the UFT market and for freight transport demand management and planning.

⇒ **1. Recognition scheme**

**Recognition scheme** means a form of operators qualification, resulting in:

- introduction of vehicles with low environmental impact (e.g. natural gas, electric, hybrid, etc.);
- adoption of efficient operational processes with regard to the management, handling, transport and distribution of goods in relation to the vehicles used (e.g. minimum levels of vehicles loading, use of tracking systems allowing vehicles tracking, etc.);
- adoption of efficient operational processes with regard to the logistics platforms used to consolidate loads and their distribution organization within the last mile (e.g. location close to the city center, availability of specific equipment, etc.);
- compliance with sector's contractual regulations and dignity of workers.

**The recognition scheme is "open"**, allowing all operators to operate and perform goods delivery services within the reference urban area in a competitive and regulated market only if they meet certain environmental, logistics and safety standards (parameters).

Operators who intend to deliver goods in the urban area, to be eligible for incentives, should be bound not only to use zero or low emissions vehicles, but also to be compliancy to the requirements of logistics efficiency and to the contract terms envisaged by sector contracts.

Supposing a scenario in which all freight vehicles entering the reference area have low or no environmental impact, without considering their loading levels, would keep unsolved such problems as congestion and occupation of the roadway related to the lack of process

optimization of goods loads and journeys made for delivery. In addition, competition between different operators might take place breaching work and law regulations.

The basic concept is to give the possibility to more "virtuous" operators (which will be "certified" by the recognition scheme) to acquire a **rewarding of use**, namely the right to access the city under facilitated regulations (e.g. extended time windows, exclusive use of specific parking areas and/or road corridors, etc.), in case the supplied distribution service is compliant to the parameters which might be established within the recognition scheme.

The CLM has the function of planning, designing and sharing the above recognition scheme, with PA and stakeholders joining to the Permanent Concertation Table, which should provide **rules to access the city under facilitated regulations** for those operators that are compliant to the requirements established for the certification within the recognition scheme, such as an illustrative but not exhaustive example:

- use of freight vehicles with low or zero environmental impact;
- achieving high loading coefficients in vehicles;
- implementation of minimum time for stocking goods in the logistics platforms used for consolidation, distribution and collection of goods in the urban area (UDCs);
- compliancy to the terms and conditions provided for by sector contracts.

The concept of "certified" operator should therefore be made clear, through the definition of rules and parameters shared on the basis of the indications given by the Permanent Concertation Table, to be started early in the project.

The overall framework of the recognition scheme should be preferably defined by National or Regional governments in order to establish **harmonized and homogeneous parameters for operators certification/recognition**. This approach should be allowed to define standard rules and parameters at national or regional level (as "general concept"), allowing Local governments (Municipalities) to finally define and established appropriated and tailored parameters (standards) fine-tuned on own territorial's peculiarities and requirements.

The possible indicative **parameters (standards) for operators certification/recognition** (to be shared locally within the Permanent Concertation Table), could be the following ones:

- 1) use of environmentally friendly vehicles (e.g. LPG, CNG bi-fuel or electric) or at least freight vehicles characterized by minimum Euro 3 emissions standards;
- 2) use of light-duty vehicles (overall loaded weight not exceeding 3.5 tons);
- 3) achievement of determined minimum load factor for the single vehicles (e.g. 70% of vehicle's capacity/saturation in volume/weight);
- 4) having quality certification UNI EN ISO 9001/2008, UNI EN ISO 14001, etc.;
- 5) use of bar code or any other innovative systems (e.g. RFID) to identify packages and goods in order to ensure continuous tracking of goods throughout the supply chain;
- 6) availability of On Board Units that can connect to a remote operation panel;
- 7) a percentage of drivers have been trained in eco-driving through recognized courses.

**Operators potentially eligible for the recognition scheme** may be persons and legal entities, private or public bodies, whatever their nature, performing management, handling, transportation, distribution and collection of goods both as economically dominant activity (core business) and as an asset or ancillary activity. The PA must perform the function of "controller" through managing and issuing special permits for the "certified" operators and through implementing sample audits and checks in this regard. This will meet the targets set in terms of environmental, transport, energy and social impacts.

⇒ **2. Alternative and eco-friendly distribution system** (alternative delivery service)

Within the recognition scheme, the CLM is responsible for supporting the PA in designing and set-up **an eco-friendly and energy-efficient distribution service**, based on the model of a non-monopolistic service, ensuring continuity of goods distribution in the regulated area.

In order to ensure continuity of goods procurement in the urban area subject to restrictive measures also by those operators who do not intend to comply with the new regulations, the CLM will have to support the PA in identifying (for example through the creation of a partnership) a subject responsible to plan and implement an alternative delivery service,

starting from the most important logistics supply chains in terms of volumes and market positioning, with respect to the area covered by the restrictive measures.

It is therefore necessary to begin a consultation process with freight carriers and other professional operators serving this area in order to identify a subject who may act as a **non-exclusive "urban distributor" in competition with other "certified" freight operators**, according to market and free competition dynamics.

The task of the PA - assisted by the CLM - will be to identify and **select the managing company** that can fully meet the needs of corporate model, provided infrastructure, accessibility, innovation, skills and know-how required to manage the distribution of goods within last mile in an efficient, effective and economically sustainable way.

The identification of the managing company represents one of success indicators, as it will be able to ensure proper start-up and operational development of the alternative delivery service, respecting needs of all stakeholders involved in the urban distribution phenomenon, with the fundamental peculiarities of:

- impartiality;
- functionality;
- quality of service;
- achievement of predetermined targets.

It should be noted that the complexity of the urban distribution process can only be tackled by a manager strongly oriented to entrepreneurship, with experience in urban context of reference and able to recover, in a short time, delays and shortages of various kinds and totally responsible for exercise outcomes.

In case PA might be directed towards the **creation of a partnership (e.g. public-private or fully private)** the presence of a private entity operating in the logistics market is fundamental, because it is essential to have a figure with adequate operational capacity, able to provide access to significant volumes of goods for the activation and continuation of the alternative distribution services and having, among its targets, the aim to achieve a balanced budget, planning interventions and economic returns, in the prefixed times and ways.

A fundamental requirement of the alternative distribution service promoted by the PA, is to ensure neutrality and confidentiality with respect to those involved, so as not to cause disruption in the shipping market and to be able achieving economic self-sustainability of the distribution service, necessary to the success of the initiative. The latter is of fundamental importance: where UFT projects and initiatives have been developed, if the achievement of **self-sustainability of the business model** was not declared among the primary objectives, the project or model saw its natural conclusion as soon as public subsidies were over.

To achieve an optimal organizational structure, the managing company shall:

- use in a comprehensive and coordinated way resources and skills of engineering, operational, commercial and support staff nature;
- adopt such an organizational model as to achieve quality certification;
- enable additional services to move and distribution of goods (e.g. reverse logistics);
- ensure compliance with the terms and conditions provided for by sector contracts;
- ensure flexibility in the use of human and technical resources;
- only outsource non-core assets (non-core business).

The proposed alternative delivery service requires, then, a phase of experimentation and successive calibration (fine-tuning), necessary to ensure the robustness and technical, economic and environmental reliability (including economic self-sustainability) of the service, in order to allow its stabilization and consolidation once it is fully operational.

#### 4.1.5 How to put in force the selected set of push and pull measures

Once defined and analyzed the local context, identifying main problems and needs characterizing UFT, defined most appropriate push and pull measures addressed to solve the identified problems, developed in an articulated and structured manner the issue related to the preliminary, definitive and executive planning of the UFT model, PA has to finally **put in force the selected set of coordinated incentives, disincentives and organizational measures** following the approach described above, based on a system of restrictions, dynamic pricing (based on transit and pollution levels), on the concept of the recognition scheme and “rewarding of use” (incentives) referred to times and city areas by “certified” operators (including the identified provider of the alternative delivery service as above).

Two main actions should be undertaken by Local authority supported by the CLM:

1. **Memorandum of Understanding for UFT (Framework Agreement)**
2. **Municipal Decree for UFT (ordinance)**

⇒ **1. Memorandum of Understanding for UFT (Framework Agreement)**

Based on the extensive process of consultation with all involved stakeholders within the Permanent Concertation Table, the CLM will support the PA in formalizing and signing a **Memorandum of Understanding (Framework Agreement)** in which the involved parties formalize their commitment to adopt measures and actions aimed at supporting the program of minimizing energy consumption and pollutant emissions resulting from UFT.

The CLM will support and coordinate the PA in the preparation of a Memorandum of Understanding for the rationalization of distribution of goods within the area of intervention.

This activity will set the reference document, to be signed by the interested parties (members of the Permanent Concertation Table), which will define at least the following issues:

- urban area(s) of intervention by restrictive measures (push measures) and incentives (pull measures), regarding transit and parking of less efficient freight vehicles;
- logistics supply chain which will be included in the new regulative framework, identifying clearly supply chains and categories of operators excluded;
- times and manners for the gradual replacement of more polluting freight vehicles;
- establishment of progressive time restrictions for freight vehicles that are less efficient from an environmental, logistics and energy point of view.

The role of the CLM is to present, discuss and share the Memorandum of Understanding with the members of the Permanent Concertation Table in order to formalize and sign it.

Purpose of the Memorandum of Understanding is to formalize the commitment of the undersigning subjects to promote and actively support all initiatives aimed at reducing the negative impacts on urban mobility, limiting the emissions resulting from freight traffic and encouraging operations to use environmental-friendly vehicles, according with the common rules and standards (recognition scheme) ratified in the Permanent Concertation Table.

In order to achieve these objectives, it will be necessary to promote gradual replacement of freight vehicles owned by companies with activities within the area(s) of intervention and, at the same, support and incentive “virtuous” operators (according with the recognition scheme)

The Memorandum of Understanding should be used to establish, among others:

- timing of gradual renewal of vehicles used for purposes of goods delivery;
- progressive limitations to access, including establishment of specific time slots for loading/unloading operations, up to a possible prohibition to access for the most polluting vehicles;
- recognition scheme for operators who wish to carry out goods transport and delivery under facilitated regulations (e.g. wider time windows) within the area(s) of intervention.

Local administration (Municipality), Trade Associations and undersigning organizations/companies will have to commit to undertake the following actions:

- a) to support initiatives and measures, envisaged by the Local Administration and shared within the Permanent Concertation Table, for the reorganization of the distribution of selected logistics supply chains in the area(s) of intervention;
- b) to promote gradual replacement of more polluting vehicles in the agreed manner and time, while delivering the necessary permits to access the area subject to limitations;
- c) to restrict access and arrange the time for loading/unloading goods for third parties for the selected urban area(s) to be regulated by specific decree for UFT (ordinance);
- d) to establish a recognition scheme through which freight vehicles will be registered on the basis of minimum parameters established in the Memorandum of Understanding;
- e) to protect, through the use of specific extended time slots, “virtuous” companies that adhere to the purposes specified in the Memorandum of Understanding, participating actively in the improvement of urban life and achievement of the objectives laid down by Regional/National and Community regulations and directives.

## ⇒ 2. Municipal Decree for UFT (ordinance)

A optimum framework of intervention requires that the PA makes previously defined rules and regulations (incentive and restrictive measures) enforceable through a **municipal ordinance (for the principle of subsidiarity) to regulate transit and parking of vehicles used for purposes of goods delivery** within the area(s) of intervention.

The set of regulative measures (identified and shared within the Permanent Concertation Table) should be implemented alongside the implementation of the provisions in the Memorandum of Understanding in order to make executive and timely effective the act itself.

The central element is the regulation that the PA promotes on the definition or expansion of Limited Traffic Zones (LTZs) or pedestrian areas, within which to spread the concept of UFT reorganization by means of rules and differentiated access time slots for these areas.

Such acts are preparatory to the reorganization of the goods distribution system and represent indispensable steps for dissemination of the concept of sustainable mobility as a fundamental step for a change of mentality, a prerequisite for spreading of initiatives aimed at better urban livability and energy savings. It should be noted that it is not always possible to undertake such a journey in a concerted manner, especially in urban areas in which interventions for sustainable mobility are unprecedented. Therefore it is essential to carry out such preliminary investigations to allow both decision makers and businesses wishing to invest in these areas (reorganizing their structures or fitting in contexts as last mile goods distribution), understanding respective needs, in order to have a first indication on the feasibility of effective solutions and on new and better ways to make them operational.

Among the easier regulative instruments to achieve regulation of traffic flows available to the PA, **ordinances to limit and control urban area can be identified** as follows:

- ordinances restricting access to Limited Traffic Zones (LTZs);
- restrictive ordinances for types of vehicle and time;
- restrictive ordinances for pedestrian areas or other specific urban areas.

These three types of municipal ordinances can simply define the borders of LTZ, where access is allowed only to residents, authorized vehicles or limited to specific types of vehicles (based on size or Euro emissions standards), up to the definition of pedestrian areas in which access is prohibited to unauthorized vehicles, with sanctions and restrictions that are higher compared to what is normally expected for a LTZ

In general this type of regulative instruments are easy to implement, their preparation and approval process follows a relatively simple path and the results obtained are a function of the level of restriction and control implemented. It should be emphasized that this type of regulation allows the PA to obtain good results in terms of reduction and control of traffic flow, depending on the details of inspection to the access gates, on which control can be made permanent in the initial period and then moving to a periodic or sample inspection.

The CLM has the role to support the PA in preparing and finalizing such ordinances, after a strong discussion sharing with involved stakeholders in the Permanent Concertation Table.

In order to obtain better results in terms of quantity and user satisfaction, it is advisable to perform interventions that offer alternatives and input of "change of mentality" to citizens and freight transport and logistics operators. The involvement of professionals in freight transport sector, must always be done proactively, meaning acquisition by PA of skills and knowledge that these figures can transfer as professionals interested in maximizing loads and profits.

#### 4.1.6 Monitoring of the impacts resulting from implementation of the designed model

Once the planning phase of the UFT model is completed, an initial **testing phase** to test/calibrate/optimize the model as above is required allowing to verify its economic, environmental, energy and social sustainability. The phase of monitoring and assessing the performance of the designed model to be carried out through a testing phase can provide the PA with concrete data on which it will be possible to make appropriate assessments of the effectiveness and efficiency of the measures and interventions designed and tested on field.

The testing phase will need to put in place the whole range of regulative and organizational measures selected for the identified area(s) and supply chain and the possible activation of the recognition scheme and alternative delivery service within the overall framework.

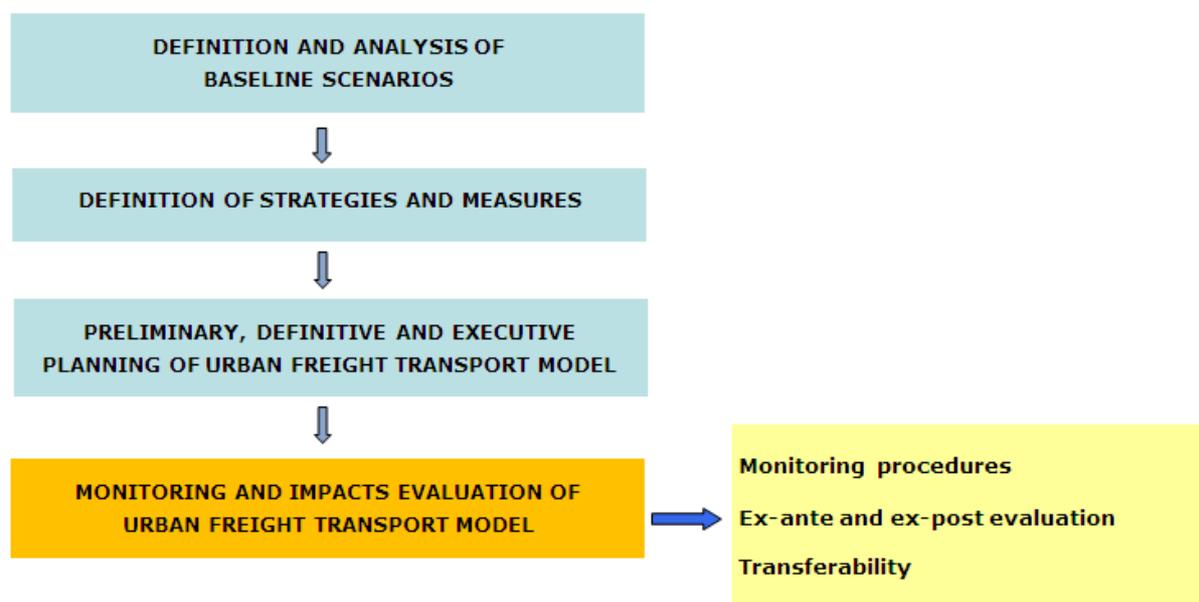
During the testing phase, **monitoring procedures** must be activated able to measure and analyze the impacts deriving from the implementation of the designed model, in order to allow on the one hand measurement of the effectiveness and efficiency of the model itself (and its economic and financial sustainability) and on the other hand to identify any problems or areas for improvement, allowing appropriate successive calibrations and modifications.

It is important that Local authorities conduct an evaluation work. This should happen before and after the implementation of policies and initiatives, this way one can determine if objectives have been met and whether UFT is more sustainable. In practice one should conduct problem identification with all stakeholders, then collect information about the problem that is at hand and lastly seek solutions in order to overcome the problems.

This process will facilitate an accurate assessment (for each regulative/organizational measure) and overall evaluation about impacts resulting from implementation of the selected measures and the overall designed UFT model by comparing the situation before the testing and after the testing. Reasonably measurements have to be carried out twice: before the start of testing (ex-ante evaluation) and upon its conclusion (ex-post evaluation).

Once incorporated and integrated in the planned model the testing results and any possible indications by the Permanent Concertation Table as well as when it deems it beneficial and sustainable for the community, the PA will have all the elements and information useful to consolidate and eventually transferring the model to other areas of the city or supply chains.

The evaluations described above enable the PA to choose whether to continue and expand the model with investments in physical infrastructure (e.g. logistics platforms, warehouses, environmental-friendly vehicles, etc.) and/or communication infrastructure (e.g. targeted communication programs, ICT systems for the reservation of parking slots, etc.), with the extension of urban areas and/or logistics supply chains to be included in the overall model.



**Fig. 6 – Monitoring of the impacts resulting from implementation of the UFT model: Actions**

A topic of fundamental importance is negative externalities and related costs (the so-called "external costs") arising from the distribution system of goods in the urban area(s) of intervention. In the system of transport and mobility, "externalities" refers to the influence that the conduct of any subject of a movement (in this case, goods) leads to another subject or to a plurality of them. These negative externalities (and external costs that are associated to them) are essentially environmental and social ones and are usually identified as:

- noise pollution;
- air pollution (emissions and greenhouse emissions);
- road accidents (safety);
- congestion.

Based on standard methodological procedures, it may be possible to make a monetary quantification of such costs, that is of the economic measurement (in fact expressed in monetary terms) of negative externalities caused to the society by the current configuration of the goods distribution system in the city. This will allow to assess the benefits in socio-environmental terms, that could be granted to citizenship or the amount of external cost savings achievable with a reorganization/rationalization of the urban distribution system.

Regarding the assessment of environmental impacts arising from the experimental of the adopted UFT model, it is suggested to put in place a deductive-like monitoring system or by simulations tools and calculations of emissions on the basis of the technical performance of the model (flow reduction, change of emission levels per unit).

To perform this type of analysis, composition of vehicles fleet (divided per power supply, emission standards and engine capacity), mileage of vehicles belonging to various categories and traffic conditions can be implemented within the emission model.

The environmental and energetic benefits expected from the implementation of such UFT model are immediate, since - **thanks to a more correct handling of freight transport demand** - the miles traveled by vehicles, the number of vehicles and traffic conditions on roads throughout the network travelled by the involved vehicles fleets will be reduced.

It is also possible to evaluate environmental benefit not only in local terms by an evaluation of the quantities of pollutants produced by freight vehicles only (those used at present and those following the introduction of the adopted UFT model), but also to make a broader assessment on traffic in the area and how this is influenced by freight transport.

#### **4.1.7 Communication activities**

A fundamental requirement of any communication plan is to be extremely flexible, targeted, constantly monitored and verifiable. The communication campaign to support the restrictive measures which could be enforced by the PA should be focused on the advantages offered by the new model of urban logistics (e.g. low environmental impact, land requalification, urban improvement, etc.) and its reliability (in terms of efficiency and effectiveness), triggering a possible direct involvement of citizens in these choices. Therefore, initiatives and actions should appropriately be "calibrated" in the territory so as to ensure maximum effectiveness both in terms of costs/benefits, spendable added value and social intervention.

It will be crucial to identify and classify the main segments interested in the new UFT model as well as customers and users, candidates and interest groups and/or key players such as:

- political institutions (e.g. municipalities, unions, associations);
- civic institutions (e.g. neighborhood and cultural associations);
- economic agents (e.g. traders, artisans, merchants).

In the designing phase it is still important to identify the strengths and weaknesses in the preparation of communication materials (e.g. letters to residents, brochures and other information media for professionals working in the area, presentations for the media, politicians and opinion leaders). Communication activities - under the supervision of the CLM for what concerns contents - will be directed primarily at building consensus and to the prevention and management of any conflicts that may arise during the different phases of the UFT model design and implementation by the PA., providing for the implementation of preventive report activities, media relations, public presentations and management activities.

There can be no definitive advice with regard to publicity, however, if UFT policies are generating good news then why not shout about it. Publicity does underline the fact that the various disparate groups are working together to try and solve local problems.

In the early stages, media and public interest could spread news about, and encourage support, for example, the work of FQPs. Once solutions have been agreed, publicity may assist as part of a general consultation process with the wider community. Ultimately the use of publicity should be dictated by the partners involved and the nature of FQPs.

## 4.2 Training course of the City Logistics Manager

### 4.2.1 General objectives of the training

The training project aims at educating of area mobility managers and of office mobility, traffic, local government planning managers.

The training of the CLM provides for the establishment of training programs that, starting from the indications of national standards, are a useful response to local needs.

The professional figures must have an updated and expanded range of skills with respect to national standards that are already enforced for the figure of mobility manager.

It will, therefore, be necessary to conduct an extensive review and development of existing professionals to define a suitable "bending" corresponding to the specific needs of urban freight transport sector. The training of the City Logistics Manager leads to a series of rules and standards at national and European level that can be summarized in the following points:

- it is the completion of non-university higher education system in line with EU guidelines;
- it can represent a possible model for the European Union;
- it is supported by a list of qualifications - common national standards - made up of professionals that can be successively expressed in profiles with respect to time (captures changes in place) and space (geographic and industry sector);
- it uses a common format for certification, focused on skills;
- it envisages non-formal skill accreditation forms upon access to the path.

#### 4.2.2 Specific targets

The specific targets of the project "**Training of urban mobility and the figure of City Logistics Manager**" are listed below:

- to develop training and organizational models for the development of integrated actions (training, system, accompanying actions) to support innovation processes related to regional strategic sectors. Logistics, in its meaning of intermodal freight transport, of management of logistics infrastructure and mobility of people are identified as strategic areas to be provided with a training that knows how to capture the complexity of transport of goods and passengers and the great opportunities for innovation that it has especially in view of sustainability;
- to identify and describe figures and professional profiles and related skills in the transport sector, both with regard to growth prospects defined by the process of reorganization of technical education and vocational training and with respect to innovation mentioned above, that must also be triggered through professionals who know how to interpret correctly and anticipate the dynamics of transport system.

As part of the general objectives mentioned above, where integration and innovation will be the backbone of the training project, the context will be associated with the pursuit of sustainable economic development and competitiveness.

The work methodology provides for the definition of a goal setting out the main target that the training project has, both in terms of training (type of expertise) and of its use, the organizational phases of training and the results to be achieved with its impact on the territory.

It is crucial to envisage a possible classification of professions, identified on the basis of what mentioned above, depending on the training provided for them, both in terms of organization and content, resulting in "consumers" of different age and cultural/professional background:

- a) post-diploma student graduated from secondary schools who do not register immediately to college, with courses in City Logistics Manager;
- b) training for Public Administration employees committed in regulation and sector planning activities (**continuous training**).

The post-diploma and continuous training represent the actual engine of a renewed professionalism that should be achieved within the logistics sector. The training referred to in point b) represents the most difficult challenge, even if it allows to design more innovative courses with international significance, and it is becoming crucial for the redevelopment of people who are already working at different levels of responsibility in public bodies.

### Objectives of Training

- To increase participants' awareness on human factors involved in interpersonal relationships.
- To promote change.
- To maximize their personal effectiveness in dealing with people.
- To achieve better results with less stress.
- To consequently optimize support and service to end-users.

### Contents – Topics

#### Basic personal attitudes

- towards oneself (self-motivation)
- towards internal and external customers (transfer positivity)
- towards their activity and function
- towards their level of responsibility
- towards change
- "engine" visions of behavior

#### Exploitation of potential staff

- To recognize and strengthen the strong sides
- Conscious use of elements of influence in communication
- development of the personal relationship levels
- stress management

#### Communication

- immediately transmitting positive feelings
- active listening

- developing positive aspects
- overcoming objections
- management of complaints and the opportunities they offer
- action to support and improve the image of the company
- routes to transform the customer in a partner

#### Practice reports

- participants' reports of their practice
- concrete, new and challenging objectives
- acting in accordance with objective, in a pragmatic way
- practical cases with analysis

#### Deepening of knowledge

- supplementary readings

### **4.2.3 Methodology and work plan**

To achieve the objectives detailed in the previous paragraph, a methodology has been developed that allows to structure and define the final design in accordance with the requirements of the transport sector in the first place.

A training having a target within the "Group" must not only produce results for the Company or the Authority, but also for individual participants. The said training should actually affect the behavior of participants and therefore the training project will be based on three pillars:

- learn "by doing" and not just "by talking";
- customization of training;
- verification of results and progresses.

Participants attend the training course by means of e-learning for up to four months, but they are "away from the Company / Organization" for a period of five days.

The training course is designed to be highly participatory, collects credits and results because much of it takes place in everyday work. The goal is to develop a visible and

effective personal effectiveness of each participant through self-awareness and the use, in practice, of the basic factors governing human behavior.

In this report the design of the course will be to provide for guidance on the methodology at the basis of the preparation of the executive plan, which involves the following phases:

- definition of the main topics covered by the executive planning;
- formation of working groups and allocation of their activity, method of work and time;
- drafting of the project will be, in its turn, divided into:
  1. Objectives;
  2. Work phases;
  3. Division of responsibilities among the participants
  4. Schedule;
  5. Indicators for monitoring and self-evaluation.

### 1. *Definition of main topics*

The methodology consists in deepening the two main topics:

- analysis of the context and needs and identification of profiles of professionals both required by the market and "missing", but that will become needed in the future. For this purpose, information derived from the following sources should be collected and systematized:
  - specific studies for the area and reference areas;
  - interviews with privileged witnesses;
  - Focus Group;
  - ad hoc surveys;
  - analysis of experiences and other notable cases.
- The analysis of the demand is compared to the existing offer and placed in the socio-economic, cultural and institutional context, to identify specific training activities of the project, the design of courses related to the figures identified during the first phase. The methodology adopted for the design phase has been divided into four thematic areas:

1. Training.
2. Technology transfer.
3. Laboratories in the field.
4. International importance.

## *2. Formation of working groups and allocation of their activities*

Once the areas covered by the executive planning are identified, it will be necessary to set up working groups. Each working group is formed on the basis of the of participants' skills and has a coordinator.

The groups are:

1. Working Group on training needs in the context of the economic system;
2. Working Group on the design of training programs;
3. Working Group on "Governance and Development".

## *3. Drafting of the executive planning*

The drafting of the executive planning is the final end of the operational methodology during the preparation of the training project and provides, in its turn, a methodology that will ensure to achieve the predetermined targets.

Given the targets, the work phases will focus on the development issues involved:

1. context analysis;
2. needs analysis;
3. three-year strategy and planning;
4. governance;
5. communication and quality.

#### 4.2.4 Reference markets

The markets under study of the training needs are those of logistics and in particular the urban goods distribution. These two markets share some common problems (movement planning and management), but differ significantly in other respects.

In particular, on the one hand the **market for freight transport logistics** is characterized by transactions involving the relationship between business and, marginally, between businesses and families, long-distance movements, a high degree of competition, regulations at a global, European and national levels, overwhelming presence of private operators.

On the other side, the **market of freight mobility in urban areas** is characterized by transactions involving mainly the agreements between firms and households as final consumers, short-range movements, a low degree of competition, with particularly strong regional and local operators that may also be participated by public bodies.

<i>1. Modes of transport and related infrastructure and services</i>
--

Training needs in relation to the mode of transport may be shared (e.g. security, computer systems, charging systems, etc.), and also deeply specific.

Training needs will be studied with reference to the urban freight sector, which aims to rationalize the distribution of goods in urban areas. This is an area that is experiencing strong growth and will increasingly be the focus of economic debate for new regulations, for connections with environmental issues and for the adoption of new technologies.

In this regard, it is necessary to identify initiatives that can be a benchmark for actions and define the characteristics of possible interventions on real situations. In any case, it is essential to involve all actors of logistics within the urban area, such as carriers (e.g. freight forwarders, couriers, etc.), traders and local governments.

The interventions of urban logistics are characterized, as previously described, not only by the limitation to access certain urban areas, but especially by the optimization of the goods distribution chain. Particularly critical appears to be the "last mile", i.e. the part of the path of goods that goes from storehouse to stores. A segment often delegated to third parties for its low added value and related issues.

The new culture for urban mobility determines the need to develop new models of urban logistics; in this respect, collaboration between the industry and local governments becomes crucial.

## 2. Context analysis

Once the reference scope of the project and the economic, social, territorial and environmental situation have been defined, also in relation to the European scenario, the context analysis must be developed and articulated through three main phases:

- state of the art;
- reference subjects;
- collection of professional needs.

The result of the three phases should lead to a range of expertise available among the possible macro areas and highlighted areas of expertise, among all the possible skills related to mobility and logistics sector.

## 3. Needs analysis

Among the main actions of the work plan of the European Union (EU) in the transport sector it is evident, as a permanent measure, "**the promotion of professions and training in the transport sector**". In particular, the project aims to train professionals in technology and organization divisions of transport companies and in Local authorities able to monitor transport of goods services and, consequently, to communicate and manage work on the regional, provincial and metropolitan mobility system.

The trained professional responds to the demand for new solutions and new professionals, requested by the civil society, the economic system and the central and local P.A. for problems of traffic, travel and trade in goods. According to the EU, in road and rail sectors there is a lack of qualified personnel and an action line that has been identified is to encourage young people to follow training courses to work in this area.

As for the logistics industry, the investigation of training needs converge **around a professional figure mainly characterized by analysis and planning capabilities able to interface with the local environment**. Operators in the sector have pointed out the need for

a scheduled, organic and not exclusively theoretical training. The need of a professional figure that is "expert in the organization of the territory", able to read the land and the companies that operate as an integrated system, emerges.

The surveys on training needs are essential to try to understand whether the changes that are affecting the logistics sector are adequately supported by a system of education, training and information as a basis for the consolidation of development. The executive figures related to the logistics industry are, therefore, characterized by a strong demand.

The educational offers regard mostly the activation of post-graduate courses for logistics staff, or the inclusion of topics concerning transport and logistics in public education channels. With regard to professional figures at a medium-high level, a lack of persons with specific training for these positions emerges, and this first result clashes, in part, with the proliferation of degree courses and above all, masters and post-graduate courses in the logistics sector. People who hold medium-high level positions in the logistics sector, in fact, are mostly people with a long experience in companies, who have grown up in a company and who have literally built up their professionalism.

Their know-how of the "logistics" is therefore constructed through *learning by doing* and, consequently, they are highly specialized. The impression is that *learning by doing* is not only a habit, but more a necessity, dictated probably by deficiencies in training. Both in the case of executive professional figures, and in the case of medium-high level professional figures, shortcomings in terms of education and training are detected. The action of the training center will, therefore, focus on the solution of this problem, through targeted interventions.

### 3.a) Evaluation of training needs

The professional profiles to be created as a result of retraining of personnel in urban goods distribution can be:

- a) Movement Coordinator: coordinates movement of vehicles and drivers operating in its responsibility unity to ensure the most regular services and flows.

- b) Transport Management Operator: manages registration of the operational aspects of freight transport, is responsible for all activities related to support services to customers, prepares reports for managers.
- c) Freight Transport Logistics technician: defines patterns of movements of freight transport.
- d) Handling/Storage Operator: takes care of the acceptance, storage, handling, shipping of goods and the real-time data updating.
- e) Driver: Drives and operates assigned freight vehicles, fulfilling the related administrative duties; takes care of stowage and loading/unloading activities.
- f) Multi-tasking Operator: deals with activities to support the maintenance of freight vehicles and warehouse management.
- g) Maintenance technician: takes care of the functioning and efficiency of mechanical, pneumatic, hydraulic means by remedial measures, prevention of failures/faults and ameliorative operations.

### *3.b) Ad-hoc surveys*

The ad-hoc surveys may relate to the business system and other relevant stakeholders.

It is necessary to define a criterion for identifying the parties directly or indirectly involved:

- freight transport companies;
- logistics companies;
- responsible for purchasing offices of companies;
- Local authorities;
- infrastructure operators and telecommunications.

A first necessary starting point is the availability of a reference panel made up of companies from various sectors.

### 3.c) Interviews with privileged witnesses

The method of discursive interviews with privileged witnesses is certainly appropriate for the purpose of defining the project's training pole. It is possible, through this instrument, to collect relevant data with the desired level of detail regarding the topics under study, by interacting with deeply informed and experienced people.

### 3.d) Focus group

There may be Focus Groups on specific issues with particularly experienced operators. According to an efficient definition, the focus group is "*a quality-based technique for social research, based on discussion among a small group of people, the presence of one or more moderators, focused on a topic that needs deep investigation*" (Corrao, 2000).

### 3.e) Analysis of other experiences and notable cases

Besides the information obtainable from the production system, it is necessary, in a medium-term planning perspective, to take into account the skill needs of the professionals figures associated with a production system that is more advanced and mature than the one observed. This information can be derived from the analysis, easily seen in literature, on organizational structure and composition for qualifications and skills of goods distribution systems that could represent the reference benchmark.

## 4. Training Courses

The identified target of high-quality training, which is a priority with respect to all other more specific targets, raises a number of constraints in the designing phase that can be summed up in the following aspects:

- capturing the elements to face the complexities and to manage a complex system as it is the logistics sector;
- acquisition of specific knowledge on transport issues;
- acquisition of experience in project management, team work through such specialized courses (theory and labs);
- learning of techniques aimed at handling discussions on multiple and conflicting points of view, to resolve conflicts and find good compromises;

- acquisition of experience in communication and ability to dialogue with stakeholders and understand others' points of views in order to translate it into a problem to be solved.

Based on these aspects and depending on the specific target that the project has, the pattern that will have to be pursued envisages a shared path and, consequently, discussions on specific topics that can be constrained, so that they can be not too long, but very targeted. Thus they can be chosen as from a menu (*choice à la carte*).

The intention is to build short and simple paths, but also more structured paths using multiple "modules" (very specific ones) to train professionals with wider knowledge and, therefore, who can be more versatile (general profile) or a professional figure who is very specialized on niche topics (very specialized profile).

The modularity, to train either general or very specialized professional figures in a simple and flexible way, will be a cornerstone of the planning of training programs which can be addressed to figures of different cultural and professional background - according to the targets - to cover the whole range of professional figures "to be trained" required by the market. From the point of view of course innovation, it is suggested to propose training units that must be finalized to the acquisition of certificates.

The organization of the training course will be divided into Capitalizable Units (CU), each of which will lead to the acquisition of at least one skill, properly certified, and will lead to the formal recognition of that individual skill that can be inserted into the training record. The ideal duration of a CU will be 8 hours. Up to a maximum of 50% of the training will be received as Distance Learning and tele-education. Tele-education and distance learning require the activation of a class tutor to support the training sessions in different locations.

On this basis, elements characterizing the training courses can be summarized as follows:

- skills certification;
- continuing and permanent education;
- distance learning.

#### **4.2.5 Communication and quality**

The defined work method envisages that a communication plan aimed at potential beneficiaries of training actions is identified. It is possible to start the organization of several events to present these methods involving government, businesses and trade associations; in a later moment, following a thorough analysis of needs, more timely and targeted promotion interventions will be defined.

In a logic of cooperation and integration with existing initiatives, the training project will build a series of contacts (national and international) with subjects able to realize interventions on similar themes, in order to establish potential new partnerships.

Monitoring and evaluation of the activities carried out by the training center will be articulated on two levels: the one related to skills and the one related to the demand for services.

From the skills point of view, it will be necessary to start a periodic survey (panel) on the training needs of businesses; of course, the sample must also include institutions and industry associations in order to have an outline as varied as possible, that will also have to be "reasoned" and, therefore, built on the real needs of the training hub, involving companies and actors that constitute the reference pool.

In this way, it is possible to keep under observation the changes and trends in the work market and the ability of the training hubs to meet the needs of the area.

On the same sample of firms, it is necessary to promote a survey on urban demand for logistics services, per type (e.g. transportation, warehousing, order set-up, etc.).

The goal is to build a database allowing the intersection of demand and supply of logistics services. The access to such a database leads to a number of advantages:

- the opportunity to have, on the one hand, a clear picture of the situation (also useful to plan the training path);
- the opportunity to offer an innovative and useful service to the companies themselves;
- the opportunity to verify, in the course of time, the effectiveness and efficiency of the training sessions.

#### 4.2.6 Training process for the City Logistic Manager

The CLM is a role in the PA that knows all the problematic connected to urban freight and the flows of goods in the city. To obtain this information a CLM has to carry out a preliminary investigation based on the logistic operators to identify the main issues related to urban freight. After this process a CLM could plan a series of solution, regulation and infrastructure use to better manage the transport way system.

Once the planning is complete, the CLM has to verify and monitoring efficacy of implemented measures. Every single described process must be accompanied by a communication phase and by consultation with the stakeholders.

##### **Module 1: Urban Freight Transport Introduction**

For a complete introduction to the main UFT problem and thematic, this module is composed by two part as follows:

###### Part 1) Background and context definition

At this level the CLM will learn the growing complexity of mobility in urban areas, that is in the origin of widespread congestion, environmental and economic problem.

The planning of transport network and the scenarios of urban development strongly influence the characteristics of passengers and freight mobility.

The CLM will be taught also in the directive of the European Union, composed by the “Green Paper on Transport”, the “White Paper on Transport” and in the legislation concerning transport at European, National and local level.

###### Part 2) Best Practice search and analysis

This module is also composed by a section devoted to the analysis of the Best Practices carried out Worldwide. The activities of the CLM are:

- search and update of the Best Practices available thanks to participation to specific

conferences and meetings with other administrations;

- specific training sessions, analysis and SWOT with reference to the local context with identification of the bottlenecks. In this way, the CLM can learn about the best practice from the original developer and then study the best way for a local implementation.

### **Module 2: Data Collection and Analysis**

This module answers to the questions “how to get information and how to use the data collected”. There are four main methods for collecting data:

- ICT Systems;
- Questionnaires;
- Interviews;
- Manual Counts.

The first 3 methods are addressed directly to the freight distribution fleet components: logistics operator, industries, shop/retail and also to the PA. The manual count is mainly addressed to verify the traffic assets of the city (in several cases ICT solutions are implemented by the Municipality in order to have an automatic and live traffic counts) and to have more updated information to be used for future measures.

Through this module the CLM learn which are the factors information needful to understand the behaviour of the operators and to improve the freight distribution.

### **Module 3: Design and Planning**

In this module the CLM learns how to face the high complexity of planning a solution related to UFT problems in cooperation with other functions of the Municipalities (e.g. planning and building departments, etc.). The aim of this module is to provide a framework to better understand and manage the freight and to address solutions.

The module is composed by two part as follows:

#### Part 1) Regulatory framework

The CLM will learn about the most important best practices/measures to be applied in the local context and which can be split in two main categories, push and pull measures. Push measure are a tool of PA to limit and correct the behaviour of transport operators, such as:

- Road use pricing;
- Road parking pricing;
- Time window.

Pull measure can be considered as a “prize” for the virtuous operators that are used to optimize their operations with green vehicles and in general efficient transport operators, in line with the CLM principles. Examples of pull measures are:

- Granted access to the Limited Traffic Zones;
- Pass discounts;
- Free space for loading/unloading or possibility to book parking slots;
- Freight Operator schemes (recognition scheme).

#### Part 2) Organizational Measures

The second part of this module is devoted to the organizational solutions, such as:

- Tracking of goods and trucks;
- Plan routes;
- Planning and designing a proper Loading/unloading bays
- Optimization of load factors and runs;
- Alternative delivery system/service;

Cities should be considered as a sharing system, for this reason the scheduling of the activities concerning transport and logistics must be considered as a key factor also from the commercial/shops point of views.

#### **Module 4: Implementation, Monitoring and Assessment**

Monitoring and assessment of the projected actions combined with other actions developed from Local Public Administrations. The regulation system must be in line with the CLM priorities, in this way the partnership will be done in a coordinated and efficient cooperation.

The CLM should be able to plan the utilisation of different transport modes. Planned action must be oriented to use a complex system of freight transport modes consisting of road, rail, inland waterways and other freight transport modes.

Planning needs a strong cooperation among local public administrations and transport operators in order to have a common vision on the measures to be applied. Nonetheless a considerable advance in terms of time is needed, as the implementation, in many cases, requires investments and time.

In this modules the CLM will be trained on the main methods used for monitoring and updating the measures. This module is strictly connected with the implementation and the planning phases as the CLM to be able to design the best regulation has to study and monitor continuously the evolution of the measure.

### **Module 5: Communication**

One of the main activity of the CLM is to communicate his target and the meaning of his action to the other actor of the logistics process.

This is an horizontal activity that CLM will execute in his entire work. This communication must be able to reach the actor and to explain the accepted modality of distribution.

The module is composed by two main topics in which he will be trained:

- Communication: dissemination material including press releases, creation of brochures and video to be distributed to the companies about the new measures.
- Infomobility: Real time information, management of the Variable Message System (if available) for freight transport purpose, live communication with freight operators through different systems.

### **Module 6: Concertation and consensus building**

In order to develop logistics, public authorities have to match a “government” & top-down approach with a “governance” & bottom-up one, understanding operators’ needs, supporting the cooperation among private companies and operators in order to optimize transport and logistics behaviours and management.

The CLM can be the concrete solution to ease public-private joint activities in transport and logistics in urban contexts, facilitating the integration between different kind of bodies and supporting the creation of specific public policies in city logistics.

The push-and-pull measures must be discussed among the Public Administrations and the companies (shopkeepers, main transport operators, etc.) with dedicated workshops and round tables to find solutions and options.

## 5. EXPECTED BENEFITS

Consideration of air quality and energy saving should be a central theme of freight strategies as road transport remains a significant source of the emissions. Air quality and energy consumption is most likely to be a concern in busy urban areas, where traffic is a major source and so most action plans to tackle the problem are likely to focus on local transport measures, such as low emission zones. Policy interventions for passenger movements may well also impact upon the efficiency and air quality impact of the movement of goods.

Policy action directed at one transport user group may change the environmental impact of others. For instance reallocating road space in favour of one road user type may increase the emissions of other road user types travelling less efficiently. Frequently, actions to decrease mileage, reduce fuel consumption and reduce emissions have dual benefits, both in terms of efficiency benefits for business and reducing the impact on air quality. **Policies that improve the efficiency of freight vehicles can result in less fuel used therefore less emissions.**

Many companies with an interest in the movement of goods constantly review the following:

- Reduce empty running: up to 30% of lorry kilometres consists of vehicles running empty. Whilst this is, in many cases inevitable, for instance vehicles delivering a number of consignments cannot always remain fully loaded, an on-going review to maximise use of load capacity is part of many day-to-day distribution operations.
- Efficient routeing and scheduling: computer routeing programmes can reduce non-productive time and mileage whilst also providing the best possible fit to customer requirements. Co-operative arrangements between different companies within a supply chain, can markedly increase goods delivery efficiency.
- Improve driver training and reward fuel-efficient performance: the manner in which a vehicle is driven can have an enormous impact on fuel usage in addition to road safety and maintenance costs. Investment in on-going driver training can offer a tangible payback in reduced fuel, maintenance and insurance bills.
- Join Fleet Operator Recognition Schemes, which benchmark good practice and audit operators to help drive forward improvements.

- Utilise technological developments, aerodynamic fairings, newer, cleaner and more fuel-efficient engines, alternative fuels (CNG, LNG and LPG and electricity), electronic engine management and monitoring systems. Alternative fuels such as Liquid Petroleum Gas and Compressed Natural Gas can in some circumstances provide a viable alternative to conventional fuels, with consequential benefits for air quality. Emissions are considerably lower from gas powered vehicles than their diesel counterparts, especially for heavy-duty applications. Electric vehicles can also offer environmental benefits although they are best suited to urban operations because of their relatively limited range.

In the context as above, the actions and functions of the CLM aim to:

- meet freight transport needs in the city in compliance with the targets of reducing environmental, social and economic costs connected to UFT (e.g. reducing air and noise pollution, reduction of urban congestion, increase energy saving, etc.);
- increase efficiency of the goods distribution system as a whole (e.g. reduction journeys and distances, increasing vehicles loading, route and load optimization);
- improve accessibility of goods in the city with particular reference to eco-friendly and sustainable energy modes of transport (e.g. benefits for "virtuous" operators);
- influence and promote key local actors involved in the city logistics and distribution processes (e.g. transport operators, traders, etc.) to meet their mobility needs for goods collection and delivery by relying on sustainable goods distribution systems;
- guide and facilitate Local authorities and main stakeholders involved in urban logistics towards the establishment of a medium-term agreement between the parties (e.g. FQPs, memorandum of understanding, etc.) that defines and regulates the reorganization plan for distribution and collection of goods in the city;
- carry out concertation and consensus building activities engaging key local actors to discuss, define and agree on concerted actions and shared measures of intervention;
- ensure coordination of activities relating to the reorganization of urban goods distribution and collection processes with the activities of Mobility Management for passengers transport, the responsible of which is the Area Mobility Manager.

The expected benefits for the relevant key players through the UFT reorganization, by the CLM managing and coordinating of workflow, are summarized in a qualitative way as follows:

**a) for Local Administrations (Municipalities), citizens and economic operators:**

- reduction of urban congestion and consequent improvement of traffic flows, pedestrian and parking circulation;
- reduction in the use of common areas and urban areas requalification;
- reduction of emissions and energy consumption from polluting vehicular traffic;
- increase in regional competitiveness;
- increased safety and security across roads and at logistics hubs;
- increase in local taxation;
- increasing consensus among the value chain stakeholders;
- improving life quality of citizens.

**b) for transport and logistics operators:**

- increase the logistics systems efficiency;
- increase in the internal economic and organizational efficiency of the companies, gaining a competitive advantage in the market;
- reduced transportation and logistics costs;
- improved conditions for workers throughout the logistics chain;
- sharing intervention strategies and policies with the Local administration;
- promotion of innovation technology.