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Clean last mile transport and logistics management for smart and efficient local governments in Europe

Paola Cossu ^{a,*}^a*FIT Consulting srl, Via Lavinio 15, Roma 00183, Italy*

Abstract

C-LIEGE “Clean Last mile transport and logistics management for smart and efficient local Governments in Europe” is a STEER Intelligent Energy Europe Programme 2010 project focused on developing integrated framework for energy-efficient urban freight transport demand management and planning. C-LIEGE is conceived as a showcase for good practices and a helping hand for European cities striving for cleaner and sustainable urban freight transport and logistics. C-LIEGE provides solutions for decision makers and professionals in Local Authorities and for freight operators. C-LIEGE empowers a cooperative approach between public and private stakeholders targeted on the reduction of energetic and environmental impacts of freight transport in European cities and regions. C-LIEGE successfully developed and tested freight transport demand-oriented measures and decision supporting tools towards reduction of energy, environmental and economic impacts of freight transport in urban environments. A set of integrated solutions and measures were implemented and tested by the support of newly developed C-LIEGE tools: the Stakeholder Engagement Manual, Good Practice Database, Push and Pull Measures Database, Guideline for the development of Urban Freight Mobility Plan as well as the C-LIEGE Toolbox for the establishment of a City Logistics Manager. Seven pilot experiments in six European countries assessed effectiveness of the C-LIEGE approach: Bulgaria, Italy, Poland, United Kingdom, Germany and Malta. The pilot cities selected and implemented a package of demand-oriented measures such as access fees and time windows restrictions, environmental zones, recognition schemes, freight maps, Freight Quality Partnerships, etc. A total of 35 demand-oriented measures were implemented in the C-LIEGE pilot cities, based upon the C-LIEGE toolbox and guidelines.

The C-LIEGE pilot sites have introduced a wide range of measures aimed at reducing the impacts of urban freight transport: Fleet Operator Recognition Scheme (FORS) in Newcastle (UK), introduction of access restrictions for heavier freight vehicles in Montana (Bulgaria), new freight mapping in Leicester (UK) accessible via smart phone, re-routing measures in Stuttgart (Germany)

* Corresponding author. Tel.: +39-06-77-59-14-30; fax: +39-0677-25-06-49.

E-mail address: cossu@fitconsulting.it

as well as Hal-Tarxien (Malta), the establishment of Freight Quality Partnerships (FQPs) as well as Local Freight Development Plans (LFDPs) in all pilot cities. The results achieved in each C-LIEGE pilot site is summarized as follows: decreasing of CO, CO₂, NO_x and PM10 emissions (tons/year) generated by freight vehicles (Leicester: 15.3%; Newcastle: 9.5%; Stuttgart: 13.2%; Szczecin: 27.8%; Montana: 11.9%; Hal-Tarxien: 10.6%; Piacenza/Emilia-Romagna: 41.2%/44.4%), decreasing fossil fuel consumption (Leicester: 10.5%; Newcastle: 9.4%; Stuttgart: 13.1%; Szczecin: 27.8%; Montana: 11.9%; Hal-Tarxien: 10.5%; Piacenza/Emilia-Romagna: 1.7%/1.5%), decreasing operating costs for freight carriers (Leicester: 6.5% Newcastle: 5.4%; Stuttgart: 7.4%; Szczecin: 18.2%; Montana: 7.7%; Hal-Tarxien: 9.1%; Piacenza/Emilia-Romagna: 17.5%/20.1%). C-LIEGE finally filled the existing gap in know-how and professionalism in the sector by designing, fine-tuning and delivering the complimentary capabilities of City Logistics Manager. For the first time in Europe, the well-known Mobility Manager whose duties are focused on passenger transport only can be paired with a City Logistics Manager. We are convinced that the C-LIEGE tools and experiences will be of great value for urban freight transport management and logistics in other European cities and regions.

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1. Introduction

C-LIEGE “Clean Last mile transport and logistics management for smart and efficient local Governments in Europe“ is a STEER Intelligent Energy Europe Programme 2010 project focused on developing integrated framework for energy-efficient urban freight transport demand management and planning.

C-LIEGE is a project facilitating exchange of best practices on soft measures and policies in the field of clean freight transport and last mile delivery. The main goal of the C-LIEGE project is to test urban freight transport soft measures concerning their ability to reduce city freight traffic, energy consumption and pollutant emissions as well as freight operating costs. C-LIEGE framework for energy-efficient urban freight demand management and planning is based upon a novel set of integrated solutions and “push-and-pull” demand-oriented measures. C-LIEGE effectively transfers good practices and promote cooperative approach throughout a roadmap for Local Authorities to achieve a proper matching between supply and demand in urban freight transport, according with energy principles.

Urban freight transport (UFT) plays an important role in the development of cities representing an element of great importance for the economic system, mainly distributing goods to retail, commercial establishments, offices, as well as homes. UFT cannot be seen separately from other parts of the transportation chain, particularly when focusing on environmental aspects. 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. Nevertheless, UFT can have relevant negative impacts on the environment, the economy and the society in general. Common negative external impacts are air and noise pollution as well as the consumption of non-renewable energy sources.

High levels of pollutant emissions have negative effects on public health and congestion can be considered as one of the main negative externalities, causing delays in the delivering of goods, higher costs of logistic operators, decreased hours of productive service, increased emissions, more traffic accidents, etc. To minimize the negative externalities of UFT, it is essential to implement good practices in the cities to move towards clean last mile transport.

The C-LIEGE project addressed the aforementioned background context by the design and implementation of a set of integrated solutions and push and pull demand-oriented measures, supported by newly developed C-LIEGE tools, namely the Stakeholder Engagement Manual, the Toolbox for the establishment of a City Logistics Manager, the UFT Good Practice Database, the Push & Pull Measures database and other relevant guidelines.

C-LIEGE is the showcase for good practices and a helpful hand for all European cities striving for cleaner and sustainable, European Commission (2007), urban transportation. Our aim is to promote successful implementation all over Europe. It is all about effective cooperation and better management for more energy efficiency and less CO₂.

2. The C-LIEGE approach

C-LIEGE empowers a cooperative approach between public and private stakeholders that is targeted on the reduction of energetic and environmental impacts of freight transport in European cities and regions. In order to reach this objective, C-LIEGE promoted cleaner and energy efficient freight movements in urban areas.

Based on good practices the project defined an integrated framework for energy efficient Urban Freight Transport (UFT) (COM 2009 490/05) management and planning. A detailed and systematic methodology was developed to identify, select and evaluate Good Practices (GPs), C-LIEGE (2012) for the State of the Art review and integration. The methodology adopted for the Good practices elicitation was the SWOT analysis, based on identifying the strengths, weaknesses, opportunities and threats. The two main components of the SWOT were the indicators of the internal situation (Strengths and Weaknesses) and the indicators of the external environment (Opportunities and Threats). A thorough state of the art review of relevant European projects and good practices dealing with energy-efficient UFT was carried out with the aim to establish a comprehensive framework of the current situation in Europe. The collected information was included in a database, the UFT Good Practice Database. The final results of the aforementioned analysis contributed to an initial identification of soft measures and their characteristics (e.g. measure types, means of implementation, benefits, barriers and threats, actors involved, etc.) successfully implemented in European cities. This acted primarily as input to the stakeholders round tables organized in the seven C-LIEGE pilot cities for the purpose of the “Local joint strategic exercise”. In order to guarantee that a consistent and complete local strategy for each C-LIEGE pilot site, the local joint strategic exercise was performed at the local round tables as well as a completeness and consistency check of the pilot selected measures. The C-LIEGE project adopted a routine procedure with concrete check points that were developed and applied to all pilots performing the same assessment. This routine procedure is complementary to the guidelines defined in the Stakeholder Engagement Manual allowing to make a double check of consistency of proposed measures selected at the round tables. The Local joint strategy exercise implemented in each pilot case, pointed out the need to build strong cooperation and partnership among public bodies and logistics and transport operators for more efficient urban transport and efficient logistics management.

At the same time a state of the art review and good practice elicitation provided the baseline knowledge platform to ultimately define a suitable set of push and pull measures for an efficient and energy saving UFT, feeding the development of a complete database of 45 push and pull freight transport demand-oriented measures, namely the Push and Pull Measures Database. The outcomes of state of the art review, good practices elicitation as well as Local Round Tables were the input for the development of the C-LIEGE framework for freight transport demand management and planning: the C-LIEGE Toolbox for the establishment of a City Logistics Manager as well as the Guideline for development of an Urban Freight Mobility Plan.

The novel set of integrated solutions and “push-and-pull” demand-oriented measures were tested and shared in roadmaps for the implementation in European cities. Seven pilot experiments in six European countries have ensured the applicability of the C-LIEGE approach: Bulgaria, Italy, Poland, United Kingdom, Germany and Malta. C-LIEGE followed a well-tested approach in selecting the seven pilot sites. A dedicated report for the pilot design was produced which provided guidance on the design and implementation of the C-LIEGE pilot cases. Three measures (COM 2007 607) to be implemented in the pilot cities deserve special treatment in the pilot methodology, namely creating a Local Freight Quality Partnership (LFQP), developing a Local Freight Development Plan (LFDP) as well as appointing City Logistics Manager (CLM). Pilot soft measures were finally selected to properly fit local problems, characteristics and ambitions in the pilot cases, according with local joint strategy exercise.

The final evaluation included the last step to assess the likely impacts of the C-LIEGE pilot measures with respect to their implementation within the project phase and beyond. Monitor the implementation of the pilot measures and evaluation of their impacts were the main assessment activities performed during the course of the pilots roll out.

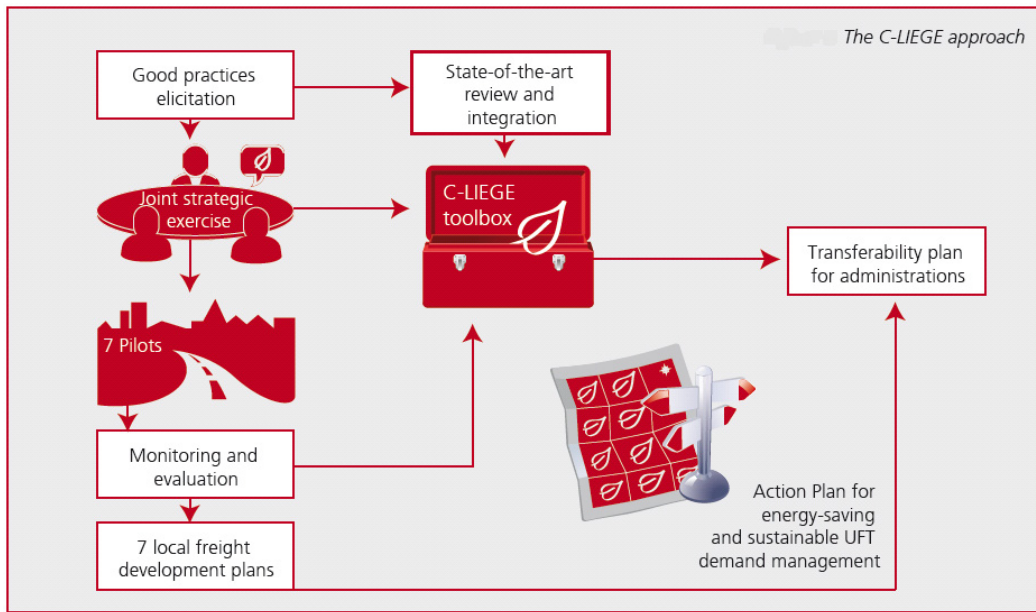


Fig. 1. The C-LIEGE approach.

3. The C-LIEGE supporting tools and solutions

Newly developed C-LIEGE tools support the implementation on the local level:

- Stakeholder Engagement Manual,
- UFT Good Practice Database,
- Push and Pull Measures Database,
- Guideline for development of an Urban Freight Mobility Plan,
- C-LIEGE Toolbox for the establishment of a City Logistics Manager (CLM).

The C-LIEGE project developed the Stakeholder Engagement Manual, which provides methodology on how to involve all different types of stakeholders throughout the planning process, addressing their specific requirements. Stakeholder involvement supports the development of a more effective and cost-efficient plans. A dedicated strategy is required for the involvement of stakeholders, drawing on different formats and techniques, when dealing with authorities, private businesses, civil society organizations as well as all of them together.

The C-LIEGE project developed a database containing the good practices on UFT identified in the C-LIEGE pilot sites, the European good practices identified by the state of the art integration as well as the ones presented in the plenary knowledge sharing workshops. A structured and manageable repository of the good practices identified was developed namely the UFT Good Practice Database. It was developed in Microsoft EXCEL, in order to obtain a directly usable, easily compatible and sustainable database, which has high quality multimedia applications allowing for an easy integration in computers that operate any of the usual software in the main Operative systems (Windows, Mac OS, and Linux).

This database contains a list of projects and good practices applications, catalogued according to the good practice typology. It is an informative supporting tool for stakeholders of the UFT sector.

The main benefits are: delivers on-demand access to valuable performance benchmarks and good practice research findings from relevant applications at EU cities; coverage of most types of good practices including both soft and hard measures; informative and knowledge supporting tool for relevant stakeholders.

The C-LIEGE project also defined a suitable set of actions/measures to encourage more efficient and energy saving methods of organizing freight transport and delivery in urban areas. The Push and Pull Measures Database was developed which provides 45 push and pull freight transport demand-oriented measures, based upon the C-LIEGE analysis of UFT good practices around Europe, with advice from the Tyne and Wear Freight Partnership.

“Push” measures are the ones imposed to freight operators with the purpose of influencing delivery and/or operational practices. “Pull” measures are designed to encourage more sustainable (ELTISPLUS project, 2011) 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 above two types, aimed at providing incentives for good practices, whilst simultaneously using fiscal or technical disincentives to deter bad ones.

This database sets out for each measure: type of measure, key stakeholders, expected impacts, timescale, possible barriers, transferability, etc. The main benefits are as follows: offer a range of measures potentially applicable to areas with different characteristics for a better managing of freight movements; providing empirical evidence of success demand-oriented measures; providing practitioners with an ad-hoc supporting tool.

A guideline document for local authorities for the development of urban freight mobility plans, as a component of their Local Transport Plans, was produced. The Guideline for development of an Urban Freight Mobility Plan was successful tested in pilot experiments supporting the C-LIEGE pilot cities in drawing up of Local Freight Development Plans (LFDPs). This guideline documents aims to assist local authorities in developing and implementing an effective and successful Freight Strategy as a component of their Local Transport Plan in order to achieve balancing between efficiency of freight, save energy as well as minimizing transport externalities

4. The C-LIEGE Toolbox: functions and roles of the City Logistics Manager

The C-LIEGE Toolbox is a decision support tool for Local Authorities to plan, implement and monitor appropriate push and pull measures aimed at integrated and energy-efficient freight transport demand management and planning in urban areas. By planning and implementing appropriate measures such as access restrictions, optimization of routes, operators recognition schemes or incentives, Local Authorities can influence last mile delivery to achieve cleaner, more cost-effective and more energy efficient freight transport in cities.

The C-LIEGE Toolbox includes a total of 45 measures, out of which 8 are “push” measures, 30 are “pull” measures, and 7 are both “push and pull”. The C-LIEGE Toolbox provides a support tool to define and establish the functions and roles of a new figure who can help coordinate effective and integrated UFT demand management and planning, namely the City Logistics Manager (CLM). The establishment of the CLM represents an important step towards delivering a new strategy for integrated passenger and freight transport in cities, supporting the EU’s promotion of the decarbonisation of European cities and regions, to meet 2020 targets.

The CLM must have an expanded range of skills with respect to national standards that are already enforced for the figure of Mobility Manager. 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 as well as the public. CLM’s role, main functions and tasks are in-depth described which includes the relevant “workflow” to the development of energy-efficient UFT governance models, integrated with the overall urban mobility. The role of the CLM is to manage freight transport demand in urban areas through:

- classification and analysis of the situation charactering 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 UFT model,
- monitoring and impacts evaluating of the planned and implemented UFT model.

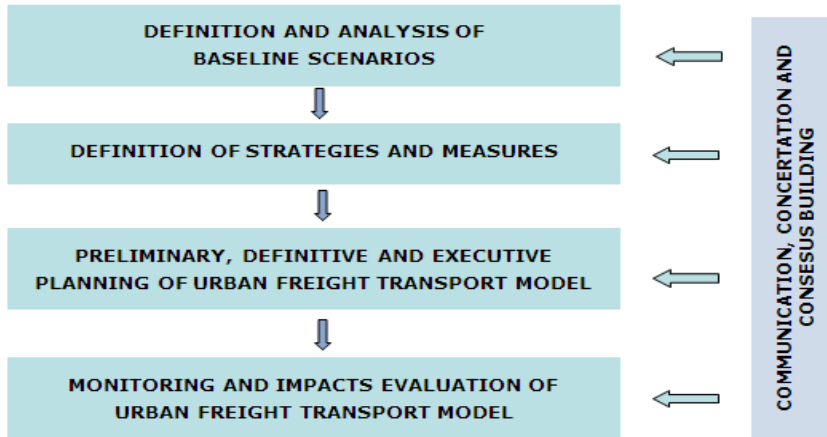


Fig. 2. Workflow related to the functions of the City Logistics Manager.

5. Results and evidences deriving from the C-LIEGE pilots

Seven pilot experiments in six European countries have assessed the effectiveness of the C-LIEGE approach: Bulgaria, Italy, Poland, United Kingdom, Germany and Malta.

The seven pilot sites were free to choose the most effective mix of soft “vertical” measures within a structured database of push and pull measures identified within the State of the art review and good practices elicitation and the Toolbox for an efficient UFTM and planning. The selected measures were implemented in the C-LIEGE pilot sites.



Fig. 3. The C-LIEGE pilot sites.

C-LIEGE pilot sites have introduced a varied and wide range of soft measures aimed at reducing the impacts of UFT. These range from a Fleet Operator Recognition Scheme (FORS) in Newcastle (UK) to the introduction of access restrictions for heavier freight vehicles in Montana (Bulgaria), from new freight mapping in Leicester (UK), accessible via smart phone, to re-routing measures in Stuttgart (Germany) and in Hal-Tarxien (Malta), up to the establishment of FQPs as well as drawing up of LFDP in all the pilot cities.

The C-LIEGE cities also established functions and role of the CLM.

The range of push and pull measures delivered in the pilot cities, based upon the Toolbox, are provided in Table 1.

Table 1. List of the push and pull measures in the C-LIEGE pilot sites.

Pilot site	Implemented measures
Leicester	<ul style="list-style-type: none"> • Freight map for appropriate routes and vehicular restrictions • Sign posting freight routes to industrial estates • Establishment of an environmental zone • Web Promotion of sustainable City Logistics • Eco Driver Training • Freight Quality Partnership (FQP) – reactivation
Newcastle	<ul style="list-style-type: none"> • Fleet Operators Recognition Scheme (FORS) • Freight Map for appropriate routes and vehicular restrictions • Urban Traffic Management Control Centre for traffic announcements • Multi-Modal Carbon Calculator • Rail Freight Partner Group • Information campaign to reduce accidents (Safe Urban Driving & Safety of Vulnerable Users)
Stuttgart	<ul style="list-style-type: none"> • Freight Quality Partnership (FQP) • Local Freight Development Plan (LFDP) • Electric vehicle goods delivery – Van sharing • Planning of optimum location of new lorry refueling station • Ad-hoc routes for freight traffic
Szczecin	<ul style="list-style-type: none"> • Freight Quality Partnership (FQP) • Local Freight Development Plan (LFDP) • Development of unloading slots • Relocation of packstations • ITS application for re-routing • Promotion campaigns for sustainable freight transport (eco-driving promotion and assumptions for FORS)
Hal-Tarxien	<ul style="list-style-type: none"> • Freight Quality Partnership (FQP) • Local Freight Development Plan (LFDP) • Allocation of additional freight parking spaces • Re-routing of freight traffic
Montana	<ul style="list-style-type: none"> • Freight Quality Partnership (FQP) • Differentiated fees for loading/unloading • Time windows restrictions • Freight map for appropriate routes • Local Freight Development Plan (LFDP)
Emilia-Romagna Region	<ul style="list-style-type: none"> • Regional harmonization of urban freight transport regulations in respect of time windows • Regional harmonization of urban freight transport regulations in respect of access restrictions for polluting freight vehicles • Local Freight Development Plan (LFDP) • Freight Quality Partnership (FQP)

An impact assessment was performed in order to monitor the implementation of the C-LIEGE measures in seven pilot sites and assess their current and future impacts. The key performance indicators (KPIs) used to evaluate the impacts were as follows: freight kilometres, fuel consumption, pollutant emissions generated by freight vehicles as well as freight operating costs. The figures in the summary Table 2 show how successful the C-LIEGE actions were and compared to the targets that the pilot sites committed themselves at the beginning were well performed and the sites achieved much higher results than expected. Pilot sites were asked to implement as well horizontal measures, types of measures that all pilot sites had to introduce in order to facilitate or enhance the implementation of the vertical measures. The two sub-chapters beneath will respectively describe the vertical and horizontal measures

5.1. Vertical measures and their impact in the pilot sites within the project timeframe

Table 2. Vertical measures and their impact in the pilot sites.

Pilot site	Vertical measures	Quantitative/qualitative targets achieved
Leicester	Freight map for appropriate routes and vehicular restrictions Sign posting freight routes to industrial estates Establishment of an environmental zone	Thanks to the three pilot measures, the km/year taken by freight vehicles was reduced by 12,696 km. The pollutant emission was 15.3% lower, the fossil fuel consumption was 10.5% less and the freight operating costs were reduced by 6.5%.
Newcastle	Fleet Operators Recognition Scheme – FORS Freight Map for appropriate routes and vehicular restrictions Urban Traffic Management Control Centre traffic announcements	With the help of the three pilot measures, the number of km made by vehicles was reduced by 67,741 km. The pollutant emission was 9.5% lower; the fossil fuel consumption less by 9.4% and 5.4% of the freight operating costs was saved.
Stuttgart	Electric vehicle goods delivery – van sharing Planning of optimum location of refuelling station Ad-hoc routes for freight traffic	Stuttgart managed to reduce the vehicles' running distance by 7,741km, the emission by 13.2%, and the fuel consumption by 13.1% -and the reduction of 7.4% of the freight operating costs.
Szczecin	Development of unloading slots Relocation of pack stations ITS application for re-routing	In the pilot area, the three C-LIEGE measures resulted in 326,107 km saved by freight vehicles, 27.8% less pollutant emission in the air, 27.8% less fuel consumption and 18.2% of the freight operating costs saved.
Hal-Tarxien	Allocation of additional freight parking spaces Re-routing of freight traffic	In the Maltese pilot site, the number of kilometres was reduced by 5,949 km, 10.6% reduction of pollutant emissions from urban freight transport, 10.5% reduction of fuel consumption and they saved 9.1% of the freight operating costs
Montana	Differentiated fees for loading/unloading & time windows restrictions Freight map for appropriate routes	In Montana city centre pilot area, the number of kilometres driven by freight vehicle is 19,239 km less, the pollutants are 11.9% less, fuel consumption is 11.9% lower and 7.7% of the freight operating costs is saved
Emilia-Romagna Region	Regional harmonization of urban freight transport regulations: Time window restrictions and Access restrictions for polluting freight vehicles	The pilot measures did not affect the number of kilometres driven but they did the air quality by 44.4%, reduced the fuel consumption by 1.5% and all in all, saved 20.1% of the freight operating costs

5.2. Horizontal measures and their impact in the pilot cities within 2020

Three main and a number of supplementary horizontal measures were put in place to support the implementation of the vertical measures in each pilot site.

These horizontal measures are:

- Freight Quality Partnership (FQP)
- Local Freight Development Plan (LFDP)
- City Logistics Manager (CLM)

The FQP was not a new phenomenon in some of the cities. They just needed to be re-activated. In others, it had to be set up and organised comprising the major private and public sector stakeholders. As a local freight network, its principal benefit is the facilitation of information and experience exchange. Their most basic and primary duty is to make a thorough analysis of the local UFT situation and identify the challenges. This analysis will enable the FQP to propose new measures and support their together with the already existing measures' implementation. By setting up

this platform, UFT issues gain a better visibility towards politician, raise their awareness to challenges and thereby prepare the ground for policy actions.

The first step towards a Local Freight Development Plan is a SWOT analysis of the current situation. This analysis leads to the identification of needs and the measures to address the challenges. To successfully put in place these measures, the support of a wide range of stakeholders is needed. If all elements are in place, local, regional, national or European funds are available and should be identified and successfully involved to maximise the impact of the set of measures. The City Logistics Manager's main duty is planning, managing and coordinating freight transport in order to achieve a more efficient, cleaner environment and a more cost-efficient and sustainable UFT. The main role of a CLM is to create a baseline scenario of urban freight transport thereupon the city can develop a UFT strategy. Last but not least, the CLM is responsible for keeping a mobilising the related stakeholders from the private and public sector, therefore he is closely linked to the aforementioned FQP and the Local Freight Development Plan.

6. Transferability and policy recommendations on energy saving UFT

An assessment of the transferability and relevant framework supporting the adoption of urban logistics processes in new settings was defined in C-LIEGE, namely Transferability plan for local governments on energy saving and sustainable demand management in UFT sector. The exercise of transferability is all about looking properly at the enablers (success drivers) and the conditioning barriers affecting the adoption of demand-oriented measures.

The most promising way to follow a transferability process is a systematic procedure at the local level, with clear milestones. There is never a single optimal solution. The success of a number of individual measures depends on several different and specific conditions. This means that the transferability analysis of an individual measure might be insufficient for a city that wishes to assess its own situation. One has to look for a combination of measures that is specifically aimed at achieving the desired result such as reduce the problems identified in the analysis.

Conducting the meetings and guiding all stakeholders through a step-by-step approach in order to evaluate an urban area in terms of urban freight policy and solutions, a city should gather a specific amount of information that will enable the understanding of the city context through a "screening" process. This consists in the first four steps of the transferability methodology. The remaining six steps correspond to the transferability process itself. Measures are quite different in what their impact is concerned.

The C-LIEGE Action Plan to improve energy efficiency of urban freight transport in EU Member States was developed. It provides a clear presentation of the policy implications of the C-LIEGE project, through the establishment of prioritized actions and their evaluation in terms of policy implications.

The results of this Action Plan are intended to provide a fundamental input for the energy efficiency dimension of urban logistics actions as foreseen in the Urban Mobility Action Plan and 2011 Transport White Paper, looking for the long-term impact of the project's findings across Europe. The C-LIEGE Action Plan recommends to the European Commission 15 specific measures to make UFT demand more efficient, sustainable and professional.

A roadmap of key actions that should be undertaken at each governance level (Local, National and EU) to promote and enhance UFT energy efficiency and sustainability is also provided. A political statement, namely the "C-LIEGE Charter for sustainable urban transport", encouraging local authorities and private stakeholders to share C-LIEGE common goals and principles of was signed by 35 cities. These statements reinforce the commitment of European cities in relation to the C-LIEGE actions and policies, encouraging the European Commission to act at this level, namely promoting the role of CLM and soft measures towards energy efficiency.

7. Conclusions

The results and success factors presented above clearly speak in favour of adopting freight transport soft measures in other cities across Europe. C-LIEGE pilot sites are to be congratulated for delivering a range of impact-oriented pilot projects, despite resourcing challenges. The wide selection of measures implemented (including the CLM establishment) should ensure that all cities, from the largest to the smallest, can identify those that may be relevant to their local needs and can study the enablers and the barriers to each measure. The key success story of the C-LIEGE project was its successful development, testing and transferring freight transport demand-oriented measures and

supporting tools towards reduction of energetic, environmental and socio-economic impacts of UFT, SMILE project, (2004).

Soft measures and hard measures for improving local freight transport should not be seen as opposites or even competing. Hard measures, such as transport infrastructure investments, should go hand in hand with soft measures that support and valorize the hard measures. It needs to be ensured that both hard and soft measures are part of an overarching local transport policy, e.g. developed and implemented in the context of local freight development plans, freight quality partnerships or city logistics management. One success story of the C-LIEGE project was the set-up and establishment of Freight Quality Partnerships (FQP) in the project's pilot sites of Montana, Emilia-Romagna, Hal Tarxien, Szczecin, Stuttgart, as well as the re-activation of the FQP in Leicester. FQPs bring together public and private stakeholders in order to jointly advance common issues and joint projects in the UFT sector. Local embedding is crucial for soft measures because they are often new and innovative and have a pronounced institutional component.

Last but not least, the C-LIEGE project filled the existing gap in expertise and professionalism in the UFT domain by designing, fine tuning and delivering the complimentary capabilities of CLM. For the first time in Europe, the well-known Mobility Manager role can now be complemented with the CLM. An ad-hoc training process addressed to educate this novel professional was also delivered. 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. All the C-LIEGE pilot sites successfully established their CLM, filling the existing gap in either knowledge and professionalism in the UFT domain by delivering its complementary capability.

In this scenario, the project transferability plan allowed a take up at EU level of this new CLM professionalism delivering to all EU cities and regions the tool to strive for cleaner and sustainable urban freight transportation.

References

- C-LIEGE, 2012, Elicitation of the Good Practices on UFT.
- COM (2007) 607, Freight Transport Logistics Action Plan, Brussels.
- COM (2009) 490/5, Action Plan on Urban Mobility.
- ELTISPLUS project, GUIDELINES developing and implementing a Sustainable Urban Mobility Plan, 2011.
- European Commission, 2007, DG Environment, Sustainable Urban Transport Plans.
- SMILE project, Sustainable Mobility Initiatives for Local Environment, 2004.