EU Smart Cities Information System

SHARINGCITIES

URBAN FREIGHT LOGISTICS
SOLUTION BOOKLET

EU Smart Cities Information System

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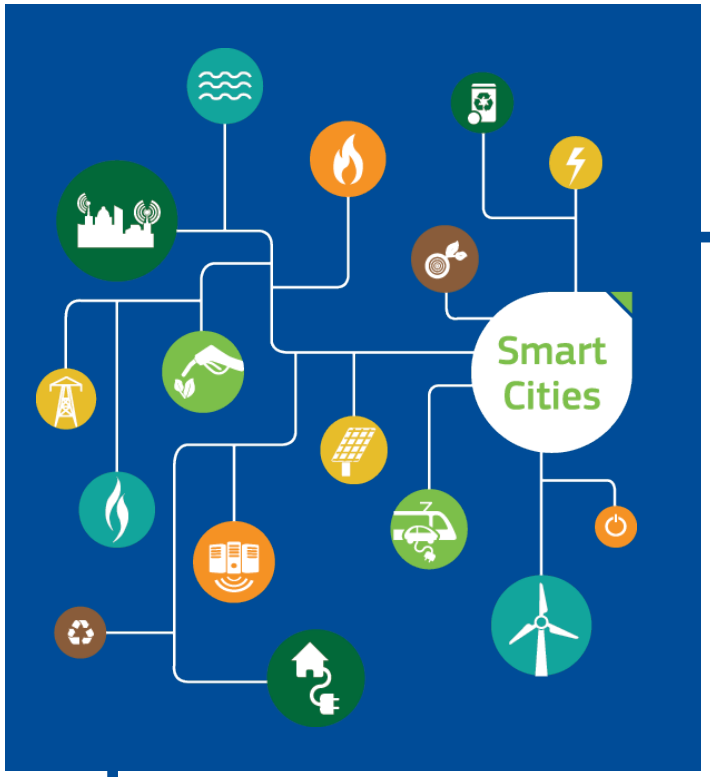

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WHAT IS THE SMART CITIES INFORMATION SYSTEM?

The Smart Cities Information System (SCIS) brings together project developers, cities, institutions, industry and experts from across Europe to exchange data, experience, know-how and to collaborate on the creation of smart cities and an energy-efficient urban environment.

WHAT IS A SOLUTION BOOKLET?

A summary of the management framework, primarily written for cities. It seeks to reduce the effort, speed up the process, strengthen quality and confidence in outputs, align across disciplines, and generally prepare a city to engage the market to acquire a solution.

WHAT IS “PACKAGING”?

‘Packaging’ addresses the societal needs, technical solutions, business models and financing for a measure – and offers ways to put these in the particular context of the city/ cities in question. It is supported by a growing number of templates to speed up and make consistent the resulting output.

WHAT & WHY

(TOOLKIT)

WHAT & WHY

Urban freight logistics cover all movements of goods into, out of, through or within the urban area made by light or heavy vehicles, including service transport and demolition traffic as well as waste and reverse logistics.

Some **city figures** regarding Urban Freight Logistics[1]:

10-15%
of total km traveled

2-5%
of the total workforce employed in urban areas

6%
of all transport-related GHG emissions

0,1
delivery/pick-up per person per day

1
delivery/pick-up per economic activity per week

300-400
freight vehicle trips per 100 people per day

1 Macário R., Innovation policy as a driver for the development of urban logistics, ITF 2012
Dablanc L., Freight transport for development toolkit: Urban Freight - Freight Transport, a Key for the New Urban Economy, 2009

Urban freight logistics directly contribute to wealth, competitiveness and efficiency of cities, whilst also having negative impacts on traffic congestion, accident rates and pollution (GHG, particles, noise). The overall goal of Urban Freight Logistics is to provide **better and more customized last-mile logistic services** for citizens, fostering **local economic development** through new local logistics businesses, while **reducing the negative impact** the delivery of goods has on our urban environments.

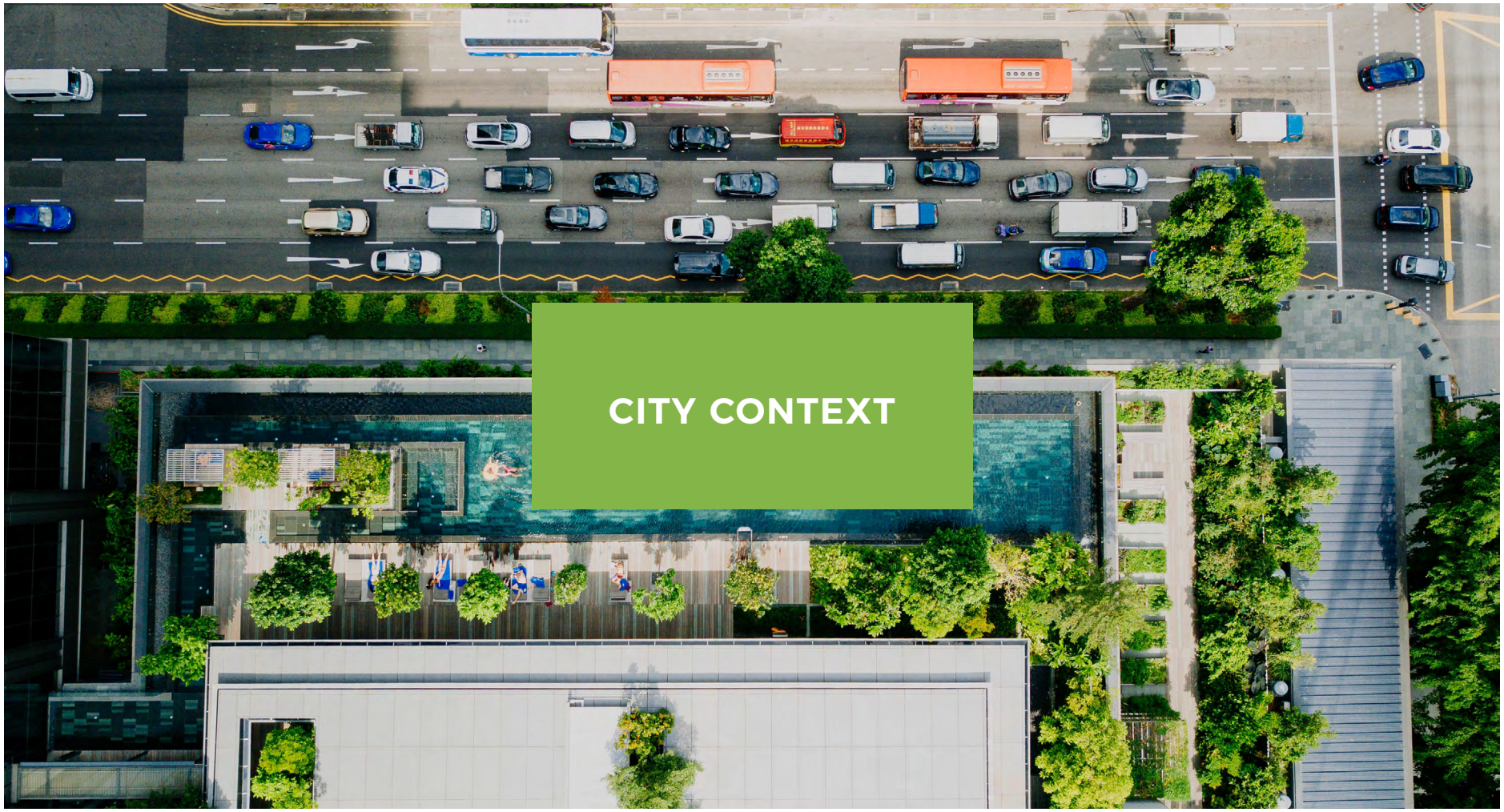
This ambition is complemented by the European Commission's interest regarding Urban Freight Logistics, as the White Paper on transport[2] states in its initiative **"Zero-emission urban logistics in major urban centres by 2030"**; its main actions intend to:

Produce best practice guidelines to better monitor and manage urban freight flows.

Define a strategy for moving towards **'zero-emission urban logistics'**, bringing together aspects of land planning, rail and river access, business practices and information, charging and vehicle technology standards.

Promote joint public procurement for low emission vehicles in commercial fleets (delivery vans, taxis, buses).

2 EU White Paper – Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system (EC 2011). Initiative 33: "Zero-emission urban logistics – in major urban centres by 2030"



CITY CONTEXT

CITY CONTEXT

Urban Freight Logistics play a key role within the urban mobility sector, where development and implementation of **innovative solutions** will help to reduce impacts of its activities on our urban environments, thus improving the quality of life of citizens.

Nowadays, Urban Freight Logistics is a major issue, as approximately 40% of overall logistic costs are spent on **last-mile services**[1]. The increase of online shopping leading to more and more home deliveries has significantly increased the complexity of Urban Freight Logistics[2]. Today's consumers are more demanding; hence user experience and instant deliveries are becoming critical factors.

In this line, innovative solutions can take advantage of latest technological advances, as well as novel management and business models, opening a window of opportunity for added value services, that bring more sustainability and effectiveness for our cities and citizens. One reality is clear: delivery of goods in our cities is suffering a **deep transformation** and we must be ready to provide better solutions to cope with this new paradigm.

Matching this deep transformation, the table below shows groups of **measures which can foster innovative solutions** aligned to this transition towards a more sustainable Urban Freight Transport in cities.

Sectors and activities entailed within Urban Freight Logistics[1]

WASTE

RETAIL

EXPRESS, COURIER AND POST

HOTEL, RESTAURANT AND CATERING

CONSTRUCTION AND ROAD SERVICES

1 Urban Logistics Opportunities – Last Mile Innovation (Frost & Sullivan, 2017)
2 Electric vehicles in the last mile of urban freight transportation (Mello Bandeira et al, 2019)

1 Based on Making urban freight logistics more sustainable. CIVITAS Webinar December 2015 (C. Di Bartolo & T. Stefanelli)

An overview of Urban Freight Logistics measures[1]:

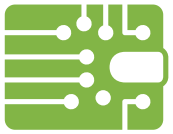
Stakeholder's Engagement	Regulatory measures	Market-based measures
• Freight Quality Partnerships • Freight advisory boards & forums • Designation of a City Logistics Manager	• Time access restrictions • Parking regulation • Environmental restrictions • Size/load access restrictions • Freight-traffic flow management	• Pricing • Taxation and tax allowances • Tradable permits and mobility credits • Incentives and subsidies
Land-use planning & infrastructure	**New technologies**	**Eco-logistics awareness raising**
• Adapting on-street loading zones • Using building code regulations for off-street delivery areas • Nearby delivery areas • Upgrading central off-street loading areas • Integrating logistics plans into land use planning • Collect points • Urban consolidations centers	• Dynamic routing • Real-time information systems • Traffic control • Electrification • Innovation within light-vehicle systems	• Anti-idling • Eco-driving • Modal shift • Flextime • Recognition & certification programmes

As the table shows, there is a complex eco-system of multiple measures affecting Urban Freight Logistics. The scale of those measures targets the whole city and, sometimes, is more focused to the district level where last-mile logistics perform. However, urban mobility generally is transitioning towards a seamless mobility model, where boundaries among scales and stakeholders involved are blurring. This results in cheaper and more flexible services, which will definitely apply to Urban Freight Logistics services as well.

Within this framework, SCC1 projects are experimenting with innovative solutions in three main fields:

ELECTRIFICATION OF URBAN FREIGHT LOGISTICS

SHIFT TOWARDS LIGHTER TRANSPORT VEHICLES

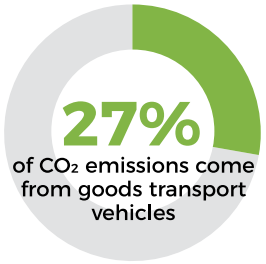


DIGITALIZATION OF PROCESSES/REAL-TIME & DYNAMIC INFORMATION SYSTEMS

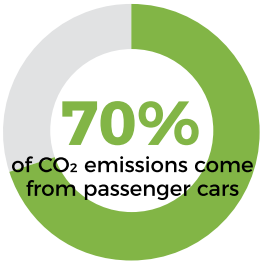
1 Making urban freight logistics more sustainable. CIVITAS Webinar December 2015 (C. Di Bartolo & T. Stefanelli)

Urban Freight Logistics electrification and GHG emissions

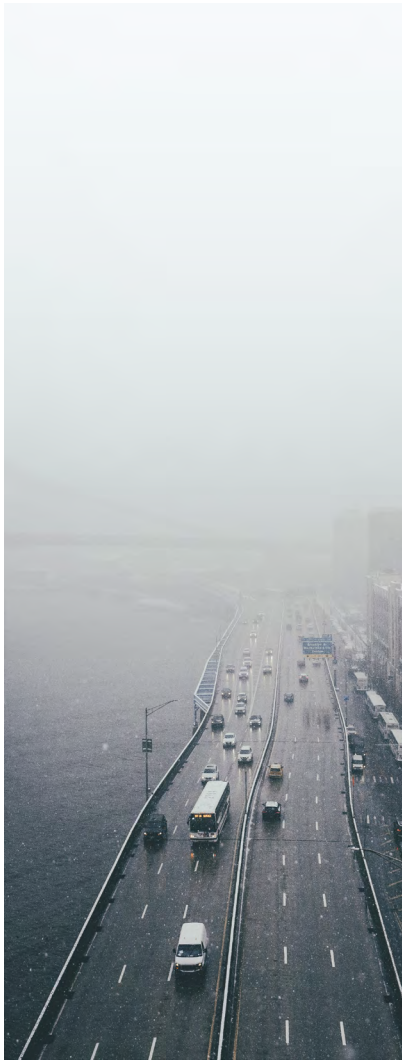
The electrification of Urban Freight Logistics activities can contribute to break dependency on oil-fueled transport vehicles and decrease urban GHG emissions. The increasingly decarbonized electricity generation will provide cleaner electricity to propel electric vehicles. Those vehicles at their turn will provide storage services to the grid, favoring further expansion of renewable energies, all in line with 2030 European goals.



The transport sector will push for a reduction of at least 60% of GHG emissions by 2050. In shorter terms, the goal by 2030 is to reduce transport emissions by 20% below 2008 levels, which would still be an 8% above the 1990 levels, due to the substantial increase of transport emissions during the last two decades.



Delving into the city level, the aim is to achieve **zero carbon city logistics in major urban areas by 2030**. Nowadays, urban transport is responsible for about 23% of total CO_2 emissions from the overall transport sector. This is still rising despite EU legislation to reduce GHG emissions. Regarding Urban Freight Logistics, they take a big slice of total urban transport emissions: about **27% of CO_2 emissions come from goods transport vehicles**, whilst 70% come from passenger cars.



SOCIETAL & USER ASPECTS

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Urban Freight Logistics activities take place in the urban environment, hence distribution networks depend upon and impact various city stakeholders[1]:

- Public authorities
- Supply chain stakeholders (shippers, transport operators, receivers)
- "Impactees" (other traffic participants, residents, visitors)
- Providers of vehicles and IT equipment devices

The stakeholders' city network entailed within Urban Freight Logistics needs the involvement of all stakeholders mentioned above to foster real change in social behavior, avoiding social resistance against new distribution models. As an enabler for the increase of innovative solutions in the field, the involvement of all these groups will foster more effective and sustainable services in the sector.

1 Making urban freight logistics more sustainable. CIVITAS Webinar December 2015 (C. Di Bartolo & T. Stefanelli)

In this line, SULPiTER project suggests the following steps to approach the Engagement phase in Urban Freight Logistics [2]:

- Step 1. Strategy Design
- Step 2. Set up the Freight Quality Partnership's objectives (FQP)
- Step 3. Mapping the city stakeholders
- Step 4. Prioritizing the stakeholders
- Step 5a. Engage the stakeholders (authorities)
- Step 5b. Engage the stakeholders (private)

What is Freight Quality Partnership?

Long-term partnership between urban freight stakeholders that, on formal or informal basis, meet regularly to discuss problems, issues and potential solutions that occur in the urban area.

2 SULPiTER project. (Sustainable Urban Logistics Planning To Enhance Regional freight transport) project website: https://www.interreg-central.eu/Content.Node/SULPiTER.html

In the case of **private actors and businesses**, their main interest relies more on practicalities connected to their own business, such as how to improve their numbers or what can endanger their profitability lines. That is why it is important to include a strong preference for **short and mid-term solutions**; otherwise they will soon lose interest in city initiatives[1]. Moreover, it is important to show them co-operation possibilities between complementary businesses and niches within the Urban Freight Logistics environment, as a path to boost their potential.

Regarding **politicians**, it is key to understand the political views of the relevant political bodies to **adjust the initiatives to the windows of opportunity** which may arise in the local context. The point is to engange key stakeholders, having a clear idea of on what role they are playing in the process, both individually and as an institutional representative.

When considering **citizens**, the best way of engaging people is to explicitly present the city initiatives and the achievable results, always realistic, addressing any potential misunderstanding of the process as well as any co-creation opportunity which may arise during design and/or implementation stages. Furthermore, **educational and research institutions** as well as experts and consultants can significantly contribute to an upgrade of solutions to be implemented.

To learn more about **collaborative approaches** regarding Urban Freight Logistics, please check CITYLAB project materials[2].

KEY QUESTIONS WHEN ENGAGING IN URBAN FREIGHT LOGISTICS ENVIRONMENT:

Which members?
-people, institutions, stakeholders' analysis-

Existing working relations?
-network analysis-

What's their mission and interest?
– depending on the stakeholders-

What can they deliver to the project and its environment?
-foster proactivity-

What level of engagement?
- inform/consult/collaborate/empower; depending on the purpose of the project-

1 C-LIEGE Project. Stakeholder Engagement Manual (Brandt & Eiber, 2011)

2 CIVITAS CITYLAB, City Logistics in Living Laboratories. http://www.citylab-project.eu/

TECHNICAL SPECIFICATIONS

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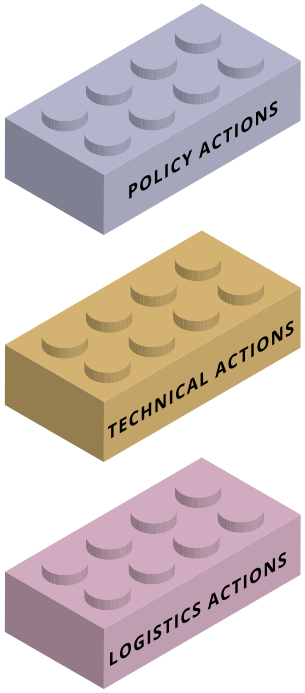
The principle of an open interoperable component-based design has been taken. This delivers flexibility and choice for cities in selecting solutions to suit their various community needs. Thinking like "Lego" building blocks to build something standard with given instructions but also having the possibility to adjust and adapt the pieces to suit your needs.

Urban Freight Logistics system components at city level

The Urban Freight Logistics system has been broken down into 3 main components (ways of action[1]) as a basic common taxonomy for any city. The mix among those 3 components determines logistics operations in the city:



1. **Policy actions.** They determine the **urban** conditions in which Urban Freight Logistics operations can take place, specifying times, locations, vehicle constraints, etc. In most EU cities, this policy level depends on municipal regulation and competences.
2. **Technical actions.** They determine the means to plan trips and communication (e.g. ICTs) entailed within Urban Freight Logistics activities as well as the means to move the freight across the city (e.g. vehicles).
3. **Logistics actions.** They determine the operational conditions for urban freight transport (e.g. delivery hours and frequency, means used, exact delivery locations, etc.).

1 Making urban freight logistics more sustainable. CIVITAS Webinar December 2015 (C. Di Bartolo & T. Stefanelli)

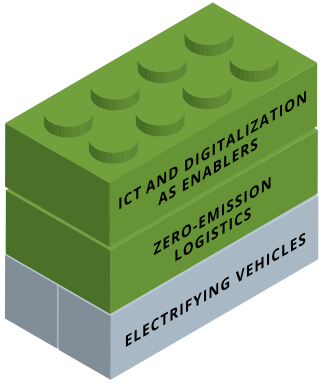
Within Urban Freight Logistics systems, regarding SCC1 projects, innovative solutions are focused on technical and logistical actions, as most of them are either:

a. targeting new ways of planning trips/ routes through **ICT and digitalization** as enablers (real-time/dynamic information and georeferenced systems), intending to better monitor, manage and plan urban freight flows; or

b. targeting **vehicles** and infrastructures, fostering **zero-emission logistics** in major urban areas by:

   i. fostering **lighter vehicles** for last-mile delivery services

   ii. **electrifying** those vehicles (and inherent infrastructures) which currently are running on fossil fuels



Of course, public administration will be in charge of promoting ambitious policy actions with the aim of facilitating the operation of both technical and logistical actions.

Photo: Manchester Bike Hire (Triangulum project)

Urban Freight Logistics solution components: a Micro-distribution Centre in Barcelona old-town

Practical example

The micro-distribution pilot project in Barcelona old-town, part of the SCC1 project GrowSmarter, is presented below, following the component-based approach. The implementation area prioritizes pedestrian flows, being a welcoming context for such businesses:

a. **Big logistics companies** (DHL, TNT, Amazon) > they sign an agreement with the local logistics company and bring their freight to the last-mile micro-distribution centre. The agreement among both companies can gather different specifications, generating multiple types of relationships (ownership, advertising, exploitation rights, etc.)

b. **Logistics local company** (Vanapedal) > they are in charge of the business and micro-distribution centre, managing deliveries to the final destination

   i. **Warehouse** > Barcelona Municipality is supporting the initiative lending a municipal warehouse for the pilot project.

   ii. **Vehicles** > The logistics local company (B) currently owns 15 electric cargo bikes, recharged by conventional plugs. The maintenance of these vehicles usually requires a mechanic able to repair and expand the lifespan of the vehicles. As an example, the average lifespan of electric cargo bikes is 5 years, which can be expanded up to 8 years with good maintenance works.

   iii. **Sensors & Data Management** > Barcelona's pilot is analysing data for further environmental & economic studies. This includes a sensor company, a data management company, CENIT analysing the data, KHT validating the study, and IESE school for economic analysis. The entire process is coordinated by the CENIT research group.

The main **KPIs** regarded in this particular case have been those targeted to **measure the positive impact** that the use of e-cargo bikes brings compared to the traditional vans' distribution: amount of total km reduction, local GHG emissions reduction, and energy use shift and reduction.

Photo by Idan Gil on Unsplash

BUSINESS MODELS & FINANCE

BUSINESS MODELS & FINANCE

This section aims to give a brief overview on the different business models and financing options that European cities demonstrators experimented during the implementation period of Urban Freight Logistics solutions.

When taking a business point of view regarding Urban Freight Logistics, it is quite risky to take successful practices and try to implement them one to one in other cities, as the potential success of those solutions depends very much on the **local context** they are intended to grow in. The main point is to carefully **characterize the targeted implementation setups**, so that potential businesses can further explore their future viability.

Description – possible business models

Regarding **business models** and the interest of companies **to invest in innovative solutions in their local contexts**, it is important to provide structured and easily understandable information about the already tested innovative solutions, so that they can analyze how to adapt those effectively to their local landscape. With this aim, the 7S framework[1] has shown how to accurately gather that information within Urban Freight Logistics solutions[2], so that local businesses can use it as an effective replication tool. As a reference of the 7S framework application, the growth of consolidation and electric vehicle use case in London is presented below. The framework looks at the key elements (7S) and how they are interconnected and effectively aligned towards objectives. The **"Hard S"** elements are easier to measure and describe, whilst the **"Soft S"** elements often determine whether a business can attain a sustainability advantage.

1 McKinsey Consultants. 7S Framework www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/enduring-ideas-the-7-s-framework
2 CITYLAB H2020 project. www.citylab-project.eu. Business-targeted dissemination. Deketele and Arcelli, 2018

Hard S (example use case London)

Strategy	Structure	Systems
How does the set-up attempt to achieve a competitive advantage? Gnewt Cargo positions itself as a consolidator and deliverer for Central London (Congestion Charge Area) making only use of electric vehicles. These vehicles offer benefits for access to the Congestion Charge Area but present challenges in profitability due to the lower carrying capacity. Gnewt performs deliveries for courier and home delivery services on behalf of online retailers, SMEs and for retailer client deliveries. Gnewt's customers are mostly parcel carriers (who use Gnewt for the last mile, e.g. TNT) and retailers. This consolidation set-up succeeds in achieving a lower distance/delivery and higher driver productivity to overcome these limitations. TNT was already using subcontracting for the last mile. Changing to Gnewt did not change the price paid/parcel for the last mile but enabled them to execute more environmentally friendly deliveries. It also enabled them to use a few trucks instead of vans to bring the parcels to the subcontracted party.	**Who is responsible for what?** TNT and Gnewt Cargo are the business parties involved. TNT decided to shift its subcontracted deliveries of small parcels from traditional van deliveries to the Gnewt set-up. The decision to select this implementation action was taken in the London Living Lab, which includes partners from Transport for London, Gnewt Cargo, TNT and University of Westminster, acting as decision making body of the CITYLAB project in London. Gnewt uses 4 depots and 100 electric freight vehicles.	**What are the systems and processes that need to be implemented?** TNT is delivering to the Gnewt Cargo consolidation centre using a Diesel truck. For both parties, the set-up follows their normal systems.
What was learnt throughout the experiment regarding the strategy? For a sustainable model, it is important to respect the existing business models of the different parties. A sustainable "carrier's carrier" business model like that of Gnewt Cargo needs to offer overall benefits by reducing the total distance per parcel (km/delivery unit) & increasing the driver productivity. The set-up of local consolidation followed by electrical vehicle distribution demonstrated it can do this: 1) Reduced distance per delivery: Due to consolidation at a centrally located facility in the city, coupled with routing, the delivery distance and the empty return is shorter compared to delivery by multiple carriers. 2) Better driver productivity Fewer trips: TNT can replace four vans by one truck. (theoretical: seven vans to one truck) Off-peak trips: The trips between the suppliers' depots and the Gnewt Cargo depot occur at night and early morning. These trips replace almost entirely the journeys occurring at congested rush hours. Mostly for smaller parcels: larger B2B parcels of TNT were too big to be able to be included for delivery by the electrical vehicles of Gnewt. Therefore, a sorting step was established to separate bigger parcels that still need to be delivered with traditional vans (another contractor).	**What are critical success factors?** A well-located consolidation centre: low capital, appropriate location, enough throughput. Enough load benefits and compatibility: vehicle fill + returns and empties improvement. It did not work for large parcels. Electric and alternative fueled vehicles and their infrastructure: optimized setups for refueling.	
What is the vision, mission and the values of supporting the strategy? The overall aim of the living lab is to improve last mile logistics making better use of local consolidation of deliveries from different parties and distribution of these with electrical vehicles in a sustainable way (= profitable for the business).		

Growth of consolidation and electric vehicle use – LONDON case; stakeholders: Gnewt Cargo & TNT (CITYLAB H2020 project. **www.citylab-project.eu/**. Business-targeted dissemination. Deliverable 7.4. More case studies are presented in this deliverable, following the same 7S framework format.)

Soft S (example use case London)			
Style	**Staff**	**Skills**	**Shared Values**
What management style/culture should be embodied by the company leaders? Focus on long term innovation coupled with a willingness for fast iterative experimentation in the market. Willingness to filter out and focus on what works.	**What type and how many employees are required?** The set-up resulted in one truck drop to the Gnewt consolidation centre, from which 7-10 van loads of 80-250 parcels are delivered.	**What are the capabilities and competences required to be successful?** It is important for the business to involve a wide range of stakeholders and to receive enough support from senior managers. Solutions based on collaboration are more likely to succeed than those based on regulations or restrictions. Likewise, direction and focus need to be based on consensus.	**What are the norms and standards that guide the behavior?** Having common ground between the disparate stakeholders and views is important, as well as good communication and transparency and managing realistic expectations from stakeholders.

Besides the revenue obtained by deliveries, there are complementary sources to be exploited in some Urban Freight Logistics solutions. In some cases, the last-mile logistics company can sell advertising rights to the big delivery companies, implementing their branding in last-mile logistics company's vehicles and workwear. However, in other cases, local regulation doesn't allow to advertise any company other than logistics companies, significantly limiting the business potential. An additional resource to be explored is demonstrating municipalities GHG emissions and noise reductions through monitoring, as this is saving emissions costs to municipalities, which may be interested in supporting this kind of initiatives.

The procurement of vehicles can be problematic in terms of financing, as electric cargo-bike systems are not currently financed by banks in most cases: each e-cargo bike costs €8.000 to €10.000 on average, a significant initial cost which might endanger a business model. In this regard, the EU Commission intends to promote schemes where joint procurement initiatives facilitate the purchase of electric vehicles for Urban Freight Logistics operations.

Photo: Manchester Bike Hire (Triangulum project)

GOVERNANCE & REGULATION

GOVERNANCE & REGULATION

Description - Governance models and regulatory measures

Current governance models regarding Urban Freight Logistics must ensure the involvement of all stakeholders, if the final goal is to promote real change towards a more sustainable distribution sector. This kind of agreement based on wider city consensus have proven a deeper impact in the long term, partially avoiding unforeseen development barriers in innovation processes.

In this regard, specific measures can enhance the governance model, such as the creation of **Freight Quality Partnerships**, **city logistics advisory boards** and forums, or the designation of a **City Logistics Manager** (facilitator role), so the governance model copes with key decision-making elements and all stakeholders feel they have the procedure to influence and contribute to this model and the overall decision-making process.

From a city perspective, CIVITAS European initiative describes a step-by-step process to frame new innovative Urban Freight Logistics

solutions, connected to the formulation of city goals and a set of indicators which ensure an effective implementation and (re)assessment of those innovative solutions[1].

Regulatory measures in this field are designed to control the delivery of goods and people in the city for the wider benefit of the society. This kind of regulation mostly relies on **local administrations** and applies not only to freight transport, but mainly to the general traffic in the city. Some of these measures concern speed limits, parking restrictions or traffic flow control.

1 Making urban freight logistics more sustainable. CIVITAS Webinar December 2015 (C. Di Bartolo & T. Stefanelli)

1. Definition of goals and objectives
2. Setting quantitative targets (key performance indicators)
3. Identification of causes
4. Identification of potential initiatives
5. Conducting performance analysis of potential initiatives
6. Evaluation and selection of preferred initiatives
7. Development of an Action Plan
8. Implementing and monitoring the Action Plan
9. Follow-up, reassessing and adaptation of the plan if needed

However, there are specific regulatory measures applying directly to Urban Freight Logistics, which can foster a better performance of these activities, such as:

- Time-based, volume or weight restrictions on access for freight vehicles;
- Emissions-based restrictions on access for freight vehicles;
- Mandatory use of low/zero emission freight vehicles;
- Encouraging use of third party UFT services rather than using own account vehicles;
- Regulations for loading and unloading freight vehicles[2]
- Parking regulation

2 Action Plan to improve energy efficiency of urban freight transport in EU member states (C-LIEGE 2013)

These regulatory measures usually have a higher degree of acceptability when compared to market-based measures, such as congestion charging for access to urban areas or emissions taxation.

In terms of training, in-depth capacity building materials are available on the topic on the SULPiTER project website (Sustainable Urban Logistics Planning To Enhance Regional freight transport - www.interreg-central.eu/Content.Node/SULPiTER.html), providing a comprehensive overview on the main concepts within the Urban Freight Logistics field, such as:

1. TRENDS AND SCENARIOS OF URBAN FREIGHT LOGISTICS IN FUNCTIONAL URBAN AREAS (FUAS);
2. FREIGHT BEHAVIOR IN FUAS;
3. BEST PRACTICES REPOSITORY

GENERAL LESSONS LEARNED

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Recommendations and actions

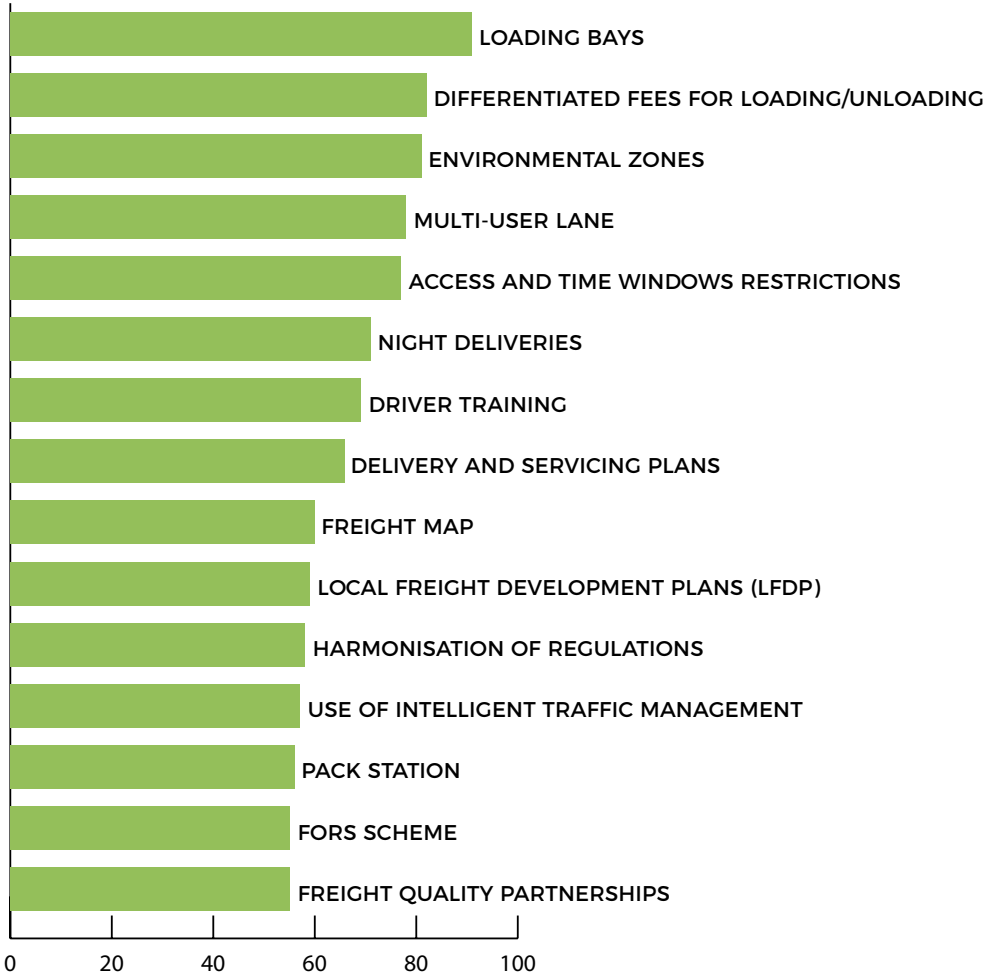
Based on materials presented in this Solution Booklet, recommendations on Urban Freight Logistics are presented below:

1. **City context matters!** Each city has a different culture, geography and goals which sets the context to design a specific solution tailored to the local city needs.
2. **The alignment of local solutions to multilevel initiatives and trends** (regional, national, European) will probably allow to find synergies on the implementation of those.
3. Urban Freight Logistics and more specifically last-mile services are evolving and currently suffering a **deep transformation.** This evolving landscape needs innovative solutions to cope with new challenges. **Be open to change!**
4. Urban mobility and logistics are transitioning towards a **seamless mobility** model where boundaries among scales and stakeholders are blurring. Logistics stakeholders should acknowledge the increasing complexity entailed and reorient it towards a more efficient and sustainable service, re-thinking the traditional models.
5. **Electrification of vehicles**, mixed approaches involving lighter transport vehicles, and digitalization of processes, including dynamic and real-time information systems, must be currently considered as mainstream trends for Urban Freight Logistics services evolution.
6. **Agreements based on wider consensus** have proven a deeper impact in the long term. This kind of engagement of Urban Freight Logistics local stakeholders can be effectively channeled through Freight Quality Partnerships, where all relevant stakeholders meet regularly and have a say in the process. The appointment of a City Logistics Manager, as a facilitator, can contribute to the effective involvement of all stakes.
7. **Each group of stakeholders needs to be addressed in a particular way**, depending on its context and interests. **Private actors and businesses** need certainty and they have stronger preferences for short and mid-term solutions which might not endanger their profitability lines. **Politicians** are very much concerned on the institutional role they play and how to adjust initiatives to the windows of opportunity which may arise in the local context. Regarding **citizens**, explicit information & communication of initiatives developed, and **collaborative approaches** are highly recommended to avoid unforeseen barriers and enrich implementation processes.

8. **Pay attention to demographics when implementing solutions,** and make sure that both are compatible. An APP-based boxes service for home deliveries might be more successful in a students' dorm than in a day care unit for seniors.
9. A **balanced mix among policy, technical and logistics actions** will provide a favorable ecosystem for innovative actions within Urban Freight Logistics.
10. Local public administrations are encouraged to foster innovative technical and logistics actions, promoting **ambitious policies** in the field as they have **relevant mobility competences** to do so in most of European cities.
11. Urban Freight Logistics **innovative businesses need a thorough characterization of the local implementation environment**. New businesses need to define their strategy, structure, systems, style, staff, skills and shared values (7S framework) to determine whether it can attain a sustainable advantage in a specific local context.
12. The development of an **Action Plan** before implementing isolated initiatives is highly recommended. Some elements to be considered in this Action Plan can be: goals and objectives; quantitative targets; identification of causes and potential initiatives; implementation, monitoring and assessment recommendations.
13. **Regulatory measures** (e.g. parking/emissions/volume/weight-based restrictions) usually have a **higher degree of acceptability when compared to market-based measures** (e.g. congestion charges/taxation).
14. As a starting point, cities can **implement effective soft measures** which may create a favorable ecosystem for new innovative Urban Freight Logistics businesses and initiatives.

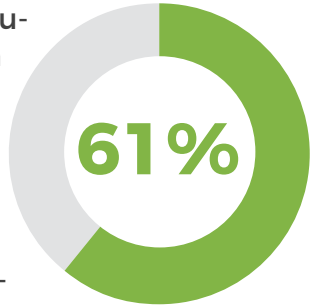
How to get started in my city?

As a starting point for cities, a Multi Criteria Analysis performed in C-LIEGE project points out the 15 "most promising" and **effective soft measures** for a more efficient, sustainable and professional urban freight transport:



In line with these soft measures, experts from CENIT (Center for Innovation in Transport) strongly recommend the implementation of an Urban Logistics APP in the city, included in local regulation. This APP will ease logistics stakeholders' operations, centralizing and digitalizing management for municipalities, as well as providing a huge amount of data to continuously improve logistics management in the city. In Barcelona, this measure is being applied since 2015 and, since then, the organization and control of urban freight has been more effective, according to local experts.

In most cases, these solutions have been already tested (trial stage), whilst others are considered as good potential initiatives, still to be tested in real environments (conceptual stage). Regarding the Technology Readiness Level, most technological solutions in the field are in demonstration phases (TRL 7 to 9), finding more implementation difficulties in management, regulatory and organizational aspects. All these soft measures can be an inspiration for cities to **update and improve local regulation** regarding Urban Freight Logistics.



Regarding citizens' opinions and GHG emissions, the EU White Paper on Transport Consultation states that **61% of respondents agree on "low emission zones (LEZs) as an effective measure to improve air quality in urban areas", where urban CO_2 free city logistics would play a key role.**

USEFUL DOCUMENTS

ANNEX: USEFUL DOCUMENTS, RELEVANT EXAMPLES & CONTACTS

Projects, initiatives & contacts

GrowSmarter (SCC1)

Communal service boxes for sustainable deliveries in Stockholm

- Contact: olle.kronby@stockholmshem.se - rasmus.linge@arcona.se

Micro distribution of Freight in Barcelona

- Contacts: francesc.gasparin@upc.edu - irene.de.cubas@upc.edu

Triangulum (SCC1)

Electric-Assist Cargo Bike Hire in Manchester

- Contact: Manchester Bike Hire - info@manchesterbikehire.co.uk

Smarter Together (SCC1)

District Sharing Boxes in Munich

E-trikes in bike sharing scheme in Munich

Siemens e-fork lifts and charging stations for employees in Vienna

MySmartLife (SCC1)

Public authority vehicle electric fleet in Hamburg

- Contact: jutta.wolff@bergedorf.hamburg.de

SULPiTER project

Sustainable Urban Logistics Planning to Enhance Regional Freight Transport

- Contact: giuseppe.luppino@regione.emilia-romagna.it

CityLab project

City Logistics in Living Laboratories

STRAIGHTSOL project

Strategies and Measures for Smarter Urban Freight Solutions

SMILE project

Smart Green innovative urban logistics for energy efficient Mediterranean cities

- Contact: irene.de.cubas@upc.edu

C-LIEGE project

Clean Last Mile Transport and Logistics Management

European Cycle Logistics Federation

Resources, events & training

- Contact: richard@c4st.uk

Relevant documents

- Roadmap to a Single European Transport Area – European Commission
- Roadmap for Transport Electrification -TRIMIS/STRIA – European Commission
- Making urban freight logistics more sustainable: from theory to practice – CIVITAS Webinar
- Elicitation of good practices on Urban Freight Transport – C-LIEGE
- Reducing impacts and costs of freight and service trips in urban areas. Business-targeted dissemination – CityLab
- White Book on Urban Freight Distribution (in Catalan) – CENIT Science for Transport

CONTRIBUTIONS:

SCIS

The Smart Cities Information System (SCIS) is a knowledge platform to exchange data, experience and know-how and to collaborate on the creation of smart cities, providing a high quality of life for its citizens in a clean, energy efficient and climate friendly urban environment. SCIS brings together project developers, cities, research institutions, industry, experts and citizens from across Europe.

SCIS focuses on people and their stories – bringing to life best practices and lessons learned from smart projects. Through storytelling, SCIS portrays the "human element" of changing cities. It restores qualitative depth to inspire replication and, of course, to spread the knowledge of smart ideas and technologies - not only to a scientific community, but also to the broad public!

smartcities-infosystem.eu

Sharing Cities

The Sharing Cities 'lighthouse' programme is proving ground for a better, common approach to making smart cities a reality. By fostering international collaboration between industry and cities, the project seeks to develop affordable, integrated, commercial-scale smart city solutions with a high market potential. The project partners work in close cooperation with the European Innovation Partnership on Smart Cities and Communities and with other `lighthouse` consortia. Sharing Cities offers a framework for citizen engagement and collaboration at local level, thereby strengthening trust between cities and citizens. The project draws on €24 million in EU funding. It aims to trigger €500 million in investment and to engage over 100 municipalities across Europe.

sharingcities.eu

SCIS is funded by the European Union