



CODEZERO TOOLSET FOR LOCAL AUTHORITIES – V1

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Executive summary

The rapid growth of e-commerce, coupled with urban densification and the expansion of on-demand services, has made last-mile logistics a critical concern for cities across Europe. While this sector underpins economic vitality and daily urban life, it also generates significant negative externalities, including congestion, emissions, and inefficient use of public space. Local authorities, traditionally treating logistics as a traffic-related issue, are increasingly recognising its cross-cutting relevance across land use, mobility, environmental, and economic policies.

The **Toolset for Local Authorities** responds to this need by identifying the key policy levers municipalities can mobilise to shape more sustainable and inclusive e-commerce logistics systems. The **Toolset** has been developed to bridge the knowledge gap and provide practical support to local authorities through:

- **A structured overview of key levers** that municipalities can activate, from regulating access through low- and zero-emission zones, to planning infrastructure such as micro-hubs and unloading areas.
- **State-of-the-art knowledge** on policies, technologies, and approaches shaping sustainable urban logistics.
- **Practical insights and case studies** from European pilot cities, illustrating how interventions can be designed, implemented, and adapted to local conditions.
- **References to existing tools and resources** for deeper exploration and practical application.

The Toolset highlights interventions across both the ‘moving’ aspects of logistics (such as vehicle flows and access management) and the ‘fixed’ aspects (such as micro-hubs, unloading zones, and facilities).

Designed as a living resource, the Toolset will evolve with one future iteration to incorporate lessons from pilot city implementations, replication activities, and stakeholder feedback. It offers local governments a concrete reference to design policies that balance economic efficiency, environmental responsibility, and social fairness in last-mile logistics.

Key words

Local authority, E-commerce, logistics, citizens, campaign, planning

This deliverable is to be approved by the European Commission

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List of abbreviations and acronyms

Acronym	Meaning
AI	Artificial Intelligence
ANPR	Automatic Number Plate Recognition
AMAT	Agenzia Mobilità Ambiente e Territorio (in Italian)
AM	Ante meridiem
B2B	Business-to-Business
B2C	Business-to-Consumer
CO ₂	Carbon dioxide
D	Deliverable
EC	European Commission
EGUM	Expert Group for Urban Mobility
EU	European Union
EV	Electric Vehicle
FUA	Functional Urban Area
GA	Grant Agreement
ICT	Information and communication technology
kg	Kilogramme
KPI	Key Performance Indicator
LEFV	Light Electric Freight Vehicle
LEV	Light Electric Vehicle
LEZ	Low Emission Zone
LoRa	Long Range
LSP	Logistics Service Provider
LTZ	Limited Traffic Zone
NO _x	Nitrogen oxides
PM	Post Meridiem
SLZ	Smart Loading Zone
SULP	Sustainable Urban Logistics Plan
SUMP	Sustainable Urban Mobility Plan
UCC	Urban Consolidation Centre
UVAR	Urban Vehicle Access Regulation
WP	Work Package
ZEZ	Zero Emission Zone
ZEZ-F	Zero Emission Zone for Freight
ZTL	Zona a Traffico Limitato (in Italian)

1 Introduction

1.1 About CodeZERO

CodeZERO is a three-year Horizon Europe research project aiming to co-create **sustainable and zero-emission last-mile delivery and return solutions for ecommerce** that align with **consumers'** preferences while being sustainable for **retailers, logistics operators** and **local authorities**. Additionally, the project is focused on providing clear, consumer-friendly communication and developing tools for local authorities to promote eco-friendly behaviour.

CodeZERO is articulated in four phases:

- 1 An **ANALYSIS** phase which provides (1) an analysis of existing delivery and return options and an understanding of how they are shaped by the needs and constraints of all involved stakeholders; (2) an in-depth intersectional analysis of various groups of on-line consumers to understand what are the features of delivery and return options making them attractive, with the aim to identify mechanisms to incentivize behaviour changes; and (3) develops an assessment framework to measure the impacts in the environmental, economic and social domains of new solutions.
- 2 A **DESIGN** phase, in which CodeZERO engages in a co-design process involving retailers, transport operators, consumers and local authorities in developing (1) guidelines for retailers to raise awareness among customers; (2) a set of zero-emission and sustainable delivery and return options for retailers and transport operators; and (3) a toolset for local authorities to accelerate the transition towards sustainable solutions in last mile consignments in e-commerce.
- 3 A **TEST** phase running 4 pilots in 4 different European cities in Italy, Netherlands, Belgium, and Norway to test a set of sustainable solutions identified in the previous phase with the aim to prove their feasibility, to fine-tune their design and to assess their impacts from the perspective of all stakeholders.
- 4 A **CONSOLIDATION** phase where (1) CodeZERO outcomes are fine-tuned based on the lessons learned from real life applications, (2) requirements for up-scaling of solutions at European level are discussed (3) recommendations are formulated and (4) directions for future research are outlined.

Engagement with consumers and retailers' associations, industry stakeholders, cities and researchers contribute to shaping project results. Running from June 2024 to May 2027, CodeZERO is organized along eight WPs:

- WP1 Analysis of current delivery models
- WP2 Analysis of consumers' behaviour
- WP3 CodeZERO assessment framework
- WP4 Design of CodeZERO solutions
- WP5 Testing solutions: CodeZERO living labs
- WP6 Conclusions and recommendations
- WP7 Dissemination, communication and exploitation
- WP8 Project management.

1.2 Context for current deliverable

The rise of e-commerce, the expansion of on-demand services and urban densification have significantly increased the importance of last-mile logistics for both economic development and the daily functioning of city life (Bjørngen, Bråthen, Hansson, & Bjerkan, 2024). E-commerce is driving parcel volume growth by 8–14% in the EU each year (EIT Inno Energy, 2024)¹.

This growing demand has also intensified the sector's negative externalities, including congestion, emissions, and inefficient road use. Last-mile logistics, often considered the most inefficient segment of the supply chain due to fragmented delivery patterns and high service expectations (Macioszek, 2018), is also a growing contributor to air pollution and traffic bottlenecks in urban environments (Mommens, Brusselaers, Van Lier, & Macharis, 2019).

In response to these evolving challenges, local authorities have a critical role to play. Traditionally, authorities mainly regulate logistics as a traffic-issue within the mobility domain. Logistics, nonetheless, has implications across multiple policy domains. The influence of local authorities over land use, infrastructure, mobility, and environmental policies places them in a key position to shape more sustainable, efficient, and inclusive logistics systems (Maxner et al., 2024; Muñuzuri et al., 2005; Shrestha and Haarstad, 2023). The involvement of multiple policy domains (e.g., economic, urban planning, mobility) is therefore required (Bjørngen & Ryghaug, 2022; Marchau, Walker & van Duin, 2008). Increasingly, local governments are integrating last-mile logistics into their broader urban strategies, whether through Sustainable Urban Mobility Plans (SUMP), Sustainable Urban Logistics Plans (SULP), or other regulatory frameworks.

As demonstrated in recent research and city practices across Europe, municipalities can act on several interconnected levels. These include regulating access through low-emission or zero-emission zones, facilitating infrastructure such as loading zones or micro-hubs, adapting land use planning to include logistics functions, and supporting the integration of innovative delivery technologies like cargo bikes, autonomous delivery vehicles. While such interventions are not always under the sole control of municipalities, they can be enabled or constrained by local decisions and policies—particularly when it comes to the accessibility of streets, the designation of delivery spaces, and the conditions for technological deployment.

Moreover, the spatial and regulatory context shaped by local authorities directly affects where and how logistics operations can function (ITF, 2021). Decisions regarding the placement of warehouses, the availability of dedicated unloading zones, and the enforcement of access restrictions (such as weight, emission, or time-based limitations) all influence the economic viability and sustainability of delivery models. While private logistics providers, retailers, and consumers are key actors in shaping last-mile logistics, the regulatory and planning environment designed by public authorities sets the overall framework in which these actors operate. In recognition of this, projects such as CodeZERO explore how local authorities can more actively steer logistics transformations by aligning infrastructure development, regulatory frameworks, and climate objectives. This includes not only controlling externalities but also creating favourable conditions for decarbonisation and circular economy models to thrive that do not jeopardise socially just working conditions.

¹Based on forecasts by McKinsey, Euromonitor, IMF, and Transport Intelligence.

1.3 Aim, scope and structure

This first version of the toolset for local authorities identifies the key leverages that local authorities can mobilise to set those framework conditions. It provides an overview of practices and remaining challenges related to those, while providing case studies to inspire and foster mutual learning across European city administrations.

This deliverable is primarily designed for local authorities engaged in shaping policies around e-commerce and last-mile logistics. It serves as a practical tool for those seeking an overview of the current state of the art, offering examples of ongoing practices as well as insights into the challenges that may arise when specific policy levers are applied. Detailed case studies provide concrete illustrations of how measures can be implemented in practice, while references to existing supporting tools offer additional resources for authorities wishing to explore particular aspects in greater depth. The toolkit can therefore be used both as a source of inspiration and as a reference guide to inform decision-making and policy development.

Designed as a practical reference for local authorities working on policies for e-commerce and last-mile logistics, this Toolset is organised in a way that allows readers to either follow it as a whole or dip into the sections most relevant to their needs and challenges.

The *Methodological approach* chapter (Chapter 2) outlines how the Toolset was developed, describing the research steps that informed its structure and content. It details the outcomes of the co-creation activities and the stakeholder engagement workshop which supported the development of the toolset. This content is then also thematically reflected in the next section.

The *Leverages for local authorities* chapter (Chapter 3) forms the core of the Toolset and can serve as the main entry point, depending on the area of greatest interest. It is structured around four key categories of levers:

- **Planning sustainable urban logistics for e-commerce**
- **Regulating sustainable urban logistics for e-commerce**
- **Supporting last-mile solutions**
- **Engaging with the ecosystem and citizens on urban logistics.**

Each section provides an overview of the state of the art, showcases examples of current practices, and presents insights from the pilot cities. One practice is described in detail as a best-practice case study, while references and supporting material are provided for those wishing to explore further.

Finally, the Toolset is intended to evolve. The **Final Version (D6.3)** will incorporate the outcomes and lessons learned from the levers tested and implemented by the pilot cities, with particular attention to their potential for upscaling through the outcome of the replication programme and the feedback from selected replicator cities. A second stakeholders' engagement workshop will be organised to present and critically discuss the outcomes and refine the toolset. Finally, the deliverable will also be published in a more user-friendly format, making it easier for cities and practitioners to navigate and apply in their daily work.

2 Methodological approach

The development of this first version of the toolset for local authorities was grounded in a multi-layered and participatory methodology in combination with a qualitative analysis to ensure relevance, usability, and ultimately scalability across diverse urban contexts. The process was structured around several key activities designed to identify real-world challenges, explore viable solutions, and validate findings with a broader audience of stakeholders.

Central to the methodology were the eight co-creation workshops (two per city) held across the four pilot cities—Milan, Utrecht, Oslo, and Antwerp (see details in D4.2). These workshops brought together stakeholders, including municipal representatives, logistics operators, researchers, citizens and business actors in groups of about 20.

The first workshop in each pilot site defined the focus that the co-design team wanted to take when solving the sustainability of delivery and return options of e-commerce in their pilot city. They aimed at finding the most essential barriers that make e-commerce not sustainable yet in their city. Through these sessions, participants identified critical urban logistics and e-commerce challenges specific to their local context, which were then synthesised into a set of problem statements.

In the second workshop, the co-design team brought up solutions that answer the challenges identified in the first workshop. The workshops facilitated the collaborative formulation of solutions to respond to the identified challenges. These solutions will be refined afterwards by the professional stakeholder group to prepare the pilots.

Together, these workshops informed both the identification of specific challenges related to e-commerce and urban logistics and the selection and definition of levers that local authorities could activate to respond to those. They also highlighted the importance of understanding how pilot cities perceive their role in shaping solutions, as this reveals the framework conditions they believe they can realistically influence – thus understanding which levers this toolset should particularly focus on. The detailed outcomes of the workshops in the four cities are described in the next sub-section 2.1. Besides the outcomes of the workshops are integrate in the thematic chapters detailing the leverages.

To validate the co-creation outcomes and broaden stakeholder input, an online workshop was held on 19 June 2025 from 9h00 to 11h30 with 20 participants (see details in Annex B). This session confirmed that many of the identified challenges and proposed approaches resonated with a wider community of local authorities (see list in Annex C). First, participants were asked to respond to a survey made of 29 questions (see questions in Annex D) to understand their status and challenges. Another important component of the workshop involved collecting ideas on the types of support cities need to strengthen their leverage over e-commerce and urban logistics systems. These included requests for policy templates, training modules, access to best practice databases, and facilitated peer-to-peer learning opportunities.

To build a comprehensive knowledge base and grasp the state of the art of local authorities on those leverages, additional desk research was conducted alongside 15 semi-structured interviews with municipal staff responsible for urban logistics (depending on the local context they were part of the urban planning, mobility departments, or economic development departments). The cities were selected to reach a geographical balance across European countries and representativity of medium-sized to larger cities.

This phase assessed the current state of policy and planning leverages used on urban logistics and e-commerce across European cities. This helped mapping the institutional actors engaged in this policy space, the staff working actively on those themes. The findings offered insight into common challenges,

policy gaps, and the diversity of approaches currently in place, further enriching the development of the toolset. Finally, the process highlighted a preliminary set of good practices already in use across different municipalities, including low-emission zones, shared micro-depots, and city-led data governance initiatives. These examples serve as early benchmarks and case references for the toolset's guidance material.

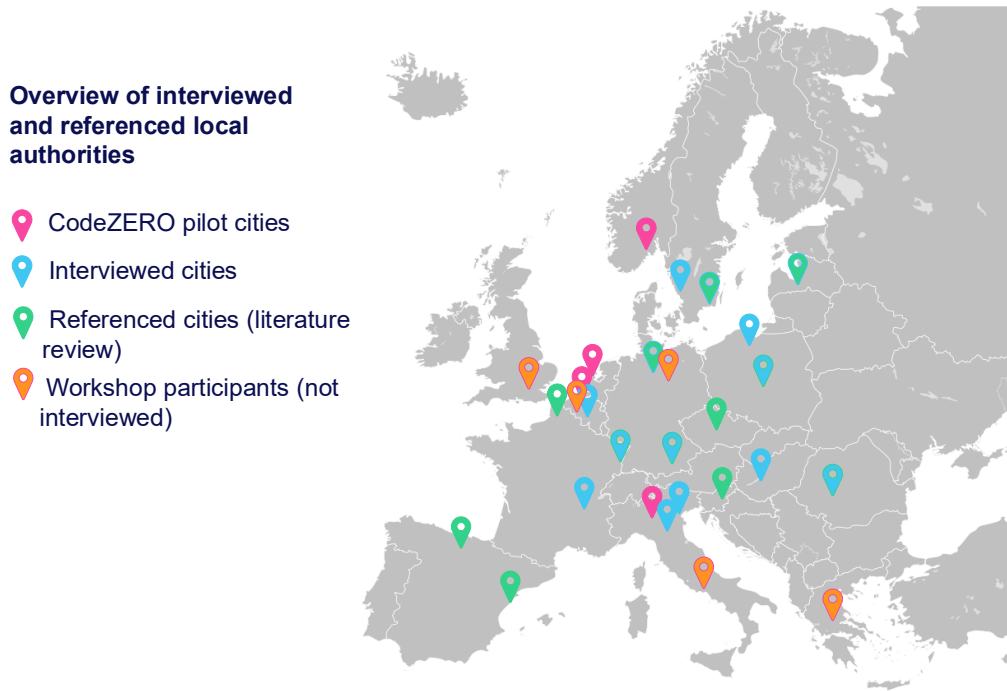


Figure 1: Map of local authorities included in the Deliverable

This blended approach ensured that the toolset is not only theoretically sound and evidence-based but also deeply rooted in the actual needs and capacities of local governments.

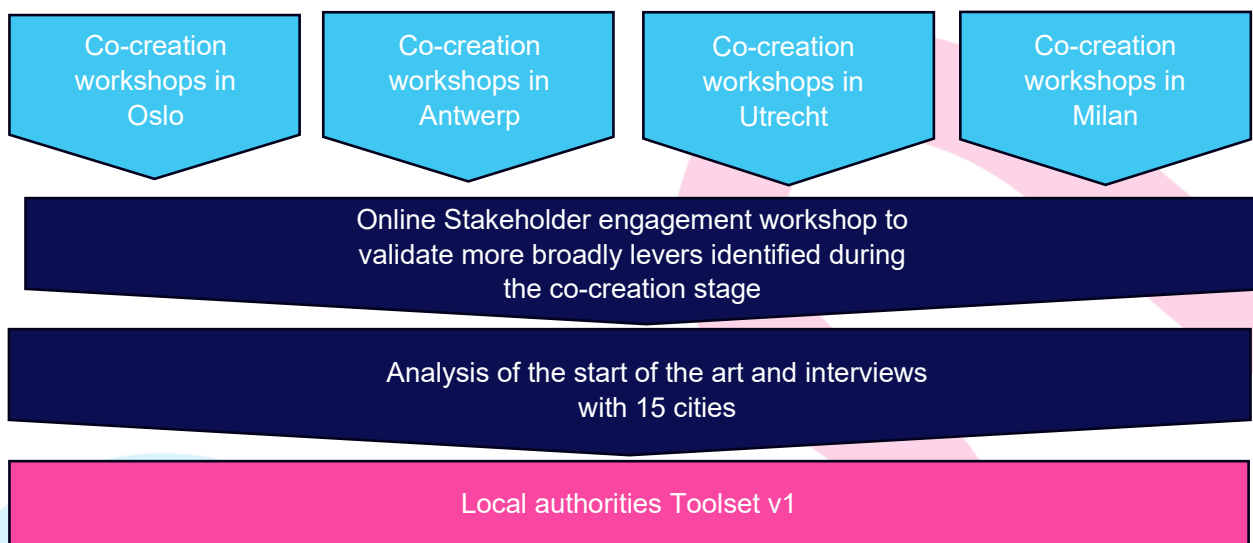


Figure 2: Methodological overview to develop local authorities' toolset v1

2.1 Outcome of co-creation workshops in the four pilot cities

The first workshop focused on the two first steps of the **Double Diamond Design model (discover and definition)** where problem statements calling for new delivery options were formulated. The second workshop was focused on the **creation** step where solutions to the problems were found. As a result from the two workshops solutions to test were identified. The process also supported the identification of key challenges perceived and faced by local authorities and how they see their role in the solutions' provision. Details on those outcomes are provided in the next four sub-sections.

2.1.1 Antwerp

The co-creation workshops held in Antwerp on 12th March 2025 and 2nd April 2025 brought forward a range of solution-oriented ideas aimed at improving the sustainability and efficiency of e-commerce logistics within the Flemish city. Stakeholders focused on both regulatory and behavioural interventions, as well as on infrastructure enhancements to support more sustainable last-mile delivery.

An identified key priority was the need to **encourage local e-commerce purchasing**. Participants emphasised the importance of supporting local retailers through digital platforms and awareness efforts, with the aim of strengthening the local economy and reducing the environmental impacts associated with long-distance deliveries.

Another topic of discussion was the need for **improved local policy coordination**, particularly in alignment with regional or leading European regulations concerning carriers. Stakeholders stressed that **harmonised rules** could increase efficiency and fairness in the logistics sector, especially when dealing with multiple operators and cross-border flows. A strong emphasis was placed on raising public awareness about the environmental impact of e-commerce, especially about product returns. One proposed initiative was a city-led communication campaign aimed at educating consumers about their role in shaping sustainable logistics practices. Infrastructure solutions were also explored, particularly around enhancing the accessibility and integration of parcel lockers in the urban environment. Ideas included placing lockers at mobility hubs, with shared bikes that feature parcel-friendly baskets to support car-free parcel pickup. Another proposal suggested installing lockers in retirement homes, which could simultaneously improve accessibility for older residents and foster opportunities for social interaction.

These proposals reflect a combination of behavioural, regulatory, and infrastructural approaches, illustrating a holistic understanding of the challenges and opportunities facing Antwerp in the context of urban e-commerce and logistics.

2.1.2 Milan

During the co-creation workshops in Milan on 28th March 2025 and 9th April 2025, several challenges faced by the public authority (AMAT) in promoting sustainable urban logistics were discussed. Although there is a clear intention from the authority to support more sustainable mobility, the measures implemented do not always lead to effective outcomes. One of the major issues is the **limited availability of loading and unloading areas** for commercial vehicles. Expanding these areas proves to be difficult because of the strong demand for residential parking. Citizens are often reluctant to give up parking spaces for private vehicles to make room for commercial operations.

Another key problem is the **lack of sufficient law enforcement**. Cargo-dedicated parking spaces are frequently occupied by private vehicles, which disrupts logistics operations. However, the municipality

lacks the resources and personnel to enforce these rules more strictly, and other priorities often take precedence.

Furthermore, transitioning to less polluting delivery vehicles presents both economic and social challenges. Many companies are not financially able to upgrade their fleets to electric vans or cargo bikes. Urban logistics encompasses multiple aspects of urban mobility planning and regulation, which makes coordination and decision-making particularly challenging for the public administration. In terms of infrastructure, cities, and Milan in particular, face limitations in adapting existing networks to accommodate dedicated routes for cargo bikes. In addition, the **high cost of renting urban space makes it difficult to establish proximity warehouses**, which are essential for effective and low-emission last-mile delivery.

To address these issues, several potential solutions were identified. One suggestion was to launch awareness campaigns to inform the public/citizens about the impact of various delivery options and the benefits of sustainable logistics. Authorities could also identify and allocate both public and private areas for sustainable urban logistics operations. Providing incentives and grants could encourage the redevelopment or designation of private spaces for this purpose. Improving infrastructure was also highlighted as a necessary step. This includes adapting existing bike networks to be suitable for professional cargo bike use and introducing dedicated signage for cargo-bike logistics. Authorities also recognized the importance of systematically addressing irregular parking and proposed the conversion of some traditional vehicle parking spaces into dedicated cargo vehicle spaces to support more efficient and sustainable delivery operations.

2.1.3 Oslo

During the co-creation workshops held in Oslo on 10th April 2025 and 8th May 2025 a key issue raised was **the lack of data on the extent and nature of goods deliveries** in the city. Without a robust evidence base, it becomes difficult for the municipality to design effective regulations or to monitor the impact of new interventions. This data gap continues to hamper the city's ability to make informed, strategic decisions on urban logistics.

Another major challenge is **managing urban space for loading and unloading**. As demand for curb space intensifies, the city struggles to ensure that logistics operations can take place efficiently without interfering with other road users or the quality of public space. This may, among other things, be due to **low compliance with signage and challenging infrastructure conditions**.

The workshops also highlighted the importance of ensuring that solutions serve all residents, including those who do not own a private vehicle. In line with Oslo's broader mobility goals, logistics activities need to reflect the city's growing population of car-free households and provide options that align with low-emission and active transport lifestyles. Lastly, securing space for logistics activities—particularly in dense, mixed-use neighbourhoods—remains a persistent challenge. Whether for micro-hubs, lockers, or loading areas, **suitable space is limited and difficult to reallocate without affecting other urban functions**.

In response to these challenges, a pilot project is being developed that brings together policy, regulation, and flexible use of public space. The proposed solution is to establish mobile parcel pick-up points for deliveries up to 30kg. These facilities aim to reduce delivery vehicle circulation and offer residents more convenient and sustainable ways to receive goods. In partnership with IKEA, the city has identified a shortlist of ten potential locations for these mobile pick-up points. These include parking spaces, curbside areas, and park-and-ride sites. Oslo has assessed these locations based on available space,

safety, existing parking signage, local conditions like access to other mobility services, social offerings and local traffic flow.

The pilot relies on close cooperation between the municipality and private partners. IKEA is helping to test the feasibility of each location, providing feedback and suggesting alternatives where needed. The company is also working on communication strategies for the launch, drawing on city-wide messaging guidelines developed through Work Package 4 (WP4). To support implementation, the city is engaging internally with municipal staff—particularly parking enforcement officers—to ensure that all involved parties are informed and that enforcement remains consistent during the pilot.

The Oslo case underlines how urban logistics policy must balance technical, spatial, and social considerations, particularly from a local government perspective. While many challenges remain—such as data availability and managing competing land-use priorities—the co-creation workshops have helped chart a collaborative path forward that is rooted in practical realities and shared ownership of solutions.

2.1.4 Utrecht

In Utrecht the co-creation workshops were organised at first with local authorities, the retailer/ logistics service providers (LSP) on the 18th of March, and then (workshop 1.2) on the 25th of June where the consumers view was included. The whole codesign team, organised a joint second workshop on the 16th of July 2025.

In the context of Utrecht, several challenges have been identified during the co-creation workshop. There is increasing pressure on urban space, making it **difficult to accommodate the growing demands of logistics spaces**. The rise in kilometres driven has led to greater congestion and associated nuisances, which require careful management. Safety and security are also a concern; although electric vans are quieter and reduce noise pollution, they may pose risks to other street users. Additionally, the **current street design is not well suited to accommodate the loading and unloading needs** of delivery vehicles. Finally, there is a need to strike a balance between the expansion of e-commerce and maintaining the liveliness and social vitality of neighbourhoods.

The solutions discussed and explored fell into two main categories. The first focused on nudging practices and pricing strategies. These included offering discounts or adding surcharges for specific delivery time slots to encourage customers to opt for more efficient delivery models; using geofencing to ensure that e-commerce grocery customers select a delivery location where vehicles can park without causing disruption; and, in the city centre, removing the option for customers to choose a delivery time slot, instead notifying them of their delivery time one day in advance.

The second category centred on piloting specific pick-up locations or micro-hubs. Proposed ideas included allowing customers to collect pre-packed groceries from a central city-centre location; establishing a micro-hub in the city centre combined with the use of light electric freight vehicles (LEFVs) for last-mile deliveries; and consolidating goods destined for the city centre at a drop-off point on the city's edge, from where cargo bikes would handle the final stage of delivery.

2.2 Outcome of the online stakeholder engagement workshop with local authorities

On 19th June 2025 the project organised a ‘Stakeholder engagement workshop’ of 2h30 with 20 participants. During the workshop city representatives (see list in Annex C) were invited to respond to a survey (see questions in Annex D) about key challenges they face and discuss in groups more specifically about planning tools and engagement practices with citizens on the topic of urban logistics. The next two sections provide details about the outcomes of the discussions.

2.2.1 Planning tools around urban logistics

City representatives participating in the online workshop encounter shared difficulties in integrating sustainable urban logistics into their planning frameworks. A recurring set of issues appears to hinder progress: **a lack of political commitment, fragmented responsibilities, limited dedicated staff** (most have 1 to maximum 5 staff members working on the topic), and **weak coordination across departments**. These challenges have for instance been shared by representatives of Ghent, Rome, and Hamburg. While some cities, including Ghent and Antwerp, are working towards comprehensive strategies, others remain at an earlier stage, still debating whether to adopt standalone Sustainable Urban Logistics Plans (SULPs) or integrate logistics considerations into broader urban mobility or development plans.

One of the central barriers identified by the group is the **misalignment between transport and spatial planning processes**. Participants expressed that there is a lack of space for urban logistics and difficulty in prioritising that activity over others. Few participants actively mapped out potential spaces adapted for lockers or hubs.

Data sharing remains limited, and there is often an **inadequate understanding of logistics needs at the city and neighbourhood level**. Engaging private actors—from the logistics ecosystem and beyond such as property developers—has also proven difficult, while the **allocation of space for logistics functions** continues to be undervalued and financially burdensome. Legal constraints further complicate matters. Cities such as Oslo and Bremen have faced barriers when attempting to implement low-emission zones or enforce access regulations.

Despite these obstacles, several opportunities were identified during the stakeholder engagement workshop. Participants emphasised the value of **tailoring planning tools to the specific logistics needs of different neighbourhoods rather than applying a one-size-fits-all approach**. National and regional frameworks could offer much-needed support for local action. **Embedding logistics requirements into building and planning standards** was seen as a promising route to ensure that new developments are logistics-ready from the outset.

Internally, better cooperation across municipal departments is essential, alongside early and sustained engagement with stakeholders. Harnessing logistics data—such as delivery flows or van movements—can improve planning accuracy and help anticipating future demands. Overall, a more integrated and strategic approach is needed to elevate logistics within urban planning and ensure it contributes positively to sustainability goals.

2.2.2 Engaging citizens and consumers in sustainable urban logistics

Citizen engagement in the field of urban logistics remains a complex and underdeveloped area. Several cities have shared the difficulties they face in raising public awareness and encouraging meaningful participation in logistics-related policies. In Bremen, balancing environmental, social, and economic considerations has proven especially challenging, particularly as cost-sensitive consumers are often

not swayed by incentives alone. Oslo reported general public apathy, with engagement largely limited to the most active citizens, whose views may not represent the broader population.

Nonetheless, there are emerging examples of more proactive approaches. Through the CodeZERO project, Milan involved consumers for the first time in logistics planning, using co-creation workshops to gather insights and build public support. Ghent conducted market research to understand citizen perspectives on low-emission zones, coupled with **communication campaigns** targeting small businesses and freight operators. This also included the deployment of a zero-emission delivery fleet. In Utrecht, municipal teams took to the **streets to talk directly with residents** about planned access restrictions, including delivery time windows, and collected feedback from those most affected.

For the future, several strategies for improved engagement have been proposed by participants. These include making the co-benefits of urban logistics policies more tangible—for example, cleaner air, less congestion, or quieter streets—and ensuring clear communication roles within the administration. Symbolic actions, for instance a “Day Without Urban Logistics,” were suggested as potential tools to spark public interest and debate. **Linking logistics to broader societal benefits**, such as climate action or local economic development, may also help increase public resonance. Lastly, addressing data gaps—particularly around van movements and the characteristics of online shoppers—will be vital to designing more responsive and inclusive policies.

2.3 Complementary interviews and desk research

To complement the co-creation workshops and the online session, 15 semi-structured interviews (interview guide with questions are available in Annex A) were conducted with representatives from medium to large cities across Europe, ensuring geographical balance (see Figure 1). The interviewees were the officials primarily responsible for urban logistics policies within their respective local authorities. Interestingly, they were not all based in the same type of department: while most worked in mobility divisions, others were positioned in environmental agencies or economic development departments. The interview findings were analysed and categorised according to the different levers. The main analytical categories used to assess the framework conditions in each city were:

- Specific planning measures implemented
- Specific incentives implemented
- Specific regulations implemented
- Governance and participatory processes
- Fixed measures implemented or facilitated

The outcomes of these interviews are presented in Chapter 3. In addition, further examples were collected through desk research and engagement activities carried out by Eurocities with its member cities.

3 Leverages for local authorities' best practices and supporting tools

This chapter presents the different levers that local authorities can activate to create a favourable framework for more socially and environmentally sustainable urban logistics practices in the e-commerce sector. Each lever is introduced through an overview of the current state of the art in European cities, followed by a discussion of the key challenges that remain in their application. The status of the CodeZERO pilot cities with respect to each lever is then outlined. Finally, each section concludes with one or more case studies and a curated selection of existing supporting tools. The content of the following sub-chapters draws on an analysis of the state of the art, complemented and updated through co-creation workshops and interviews with city representatives. The levers covered are structured into four main categories:

- 1. Planning sustainable urban logistics for e-commerce**
 - Sustainable Urban Logistics Plans (SULPs) and equivalent strategies
 - Adapting zoning and land-use tools
- 2. Regulating sustainable urban logistics for e-commerce**
 - Access regulations, including low- and zero-emission zones
 - Curbside management
- 3. Supporting last-mile solutions**
 - Lockers
 - Logistics micro-hubs
 - Support for fleet transition, including cargo bike purchase or rental schemes
- 4. Engaging with the ecosystem and citizens on urban logistics**
 - Structured and long-term collaboration with stakeholders
 - Communication and awareness-raising campaigns
 - Stimulating employment and training opportunities

3.1 Planning sustainable urban logistics for e-commerce

Urban logistics planning has gained growing recognition in European policymaking as a key enabler for cleaner, more efficient, and resilient cities and it is thus one of the first and key levers to highlight when talking about actions cities can take to act upon e-commerce and generated logistics flows. When looking at planning, it is essential to distinguish different levels of planning documents, tools and decisions. The first level to look at is the strategic documents called Sustainable Urban Logistics Plans as those encompass a vision on this specific intervention field. The way that space in cities is organized determines behaviour by logistics operators. As logistic operations quickly evolve over time and the design of cities is being done for years to come, embedding logistics in urban planning frameworks is key. Kin, Buldeo Rai, Dabanc and Quak (2024) analyse how the cities of Rotterdam and Paris embed logistics in urban planning, by giving logistics a place in the strategic planning of cities as well as in the design of streets and neighbourhoods. With regard to the latter, Kin and Quak (2024) conducted case studies with the Dutch cities of Utrecht and Zwolle in which car-free neighbourhoods are being developed. After estimating the daily logistics footprint, mitigating measures have been explored together with policy makers and developers.

3.1.1 Sustainable urban logistics plans and equivalents

SULPs aim to address the increasing complexity of freight movements in dense urban environments by providing a strategic framework like Sustainable Urban Mobility Plans for passenger mobility.

Yet, despite their strategic importance, recent research shows that formalised approaches to urban logistics remain limited across Europe. The latest large-scale study on Sulp in Europe dates back to 2021 with a sample of 125 cities. In 2021 only 13% had adopted a separate Sulp and 20% had a clear planning approach on urban logistics (European Commission, 2021). This shows only a minority of cities currently have structured planning frameworks specifically targeting goods movement, and even fewer have developed a dedicated logistics plan. In some cases, logistics measures are incorporated more indirectly through general mobility strategies for instance in Alba Lulia (Romania) the topic of urban logistics is integrated in the Urban Mobility Plan, however not at a very specific and very granular level. These figures reflect a broader trend in which freight transport receives still significantly less attention than passenger mobility in local and urban planning. While some cities already have ten years of experience such as Metropolitan City of Grenoble in France, which had their first Action Plan for logistics in 2015, a large number of cities are getting into logistics planning only recently, e.g. Rome has just published their plan in December 2024, Budapest is currently working on their Sulp and aiming for a finalised version in the course of 2026.

Where logistics is addressed, focus areas related to e-commerce tend to converge on access regulation and curbside management as well as infrastructure and operational aspects, such as the development of micro-distribution infrastructure, consolidation hubs, or smart locker systems. The next chapters will provide a detailed overview of these measures, which are increasingly seen as practical responses to the challenge of reducing congestion and emissions, particularly in light of rising e-commerce volumes.

SULPs usually define strategic objectives and a set of prioritised measures which can be sometimes updated independently from the strategic objectives. In spring 2025, the city of Gothenburg finalised its Sulp which is valid for a period of six years while the Action Plan which contains the specific measures is updated every two years. The rapid economic and technological evolutions are good reason to keep a certain flexibility on the Action Plan and the prioritisation of measures.

While the potential of SULPs is slowly being recognised as a way to give a strategic vision and structure to the work local authorities do on urban logistics, their implementation often faces institutional and technical barriers. The main first barrier is the political commitment. Working on such a planning document requires to mobilise different departments, to have at least one dedicated staff member to develop the plan, and potentially needs external experts' support. This means availability of financial resources and thus requires SULPs to be high enough on the political agenda. City representatives often speak about a lack of political interest on the topic or fear of controversy when it comes to tackling urban logistics through curbside management and parking policies. For instance, in the case of Gdynia there is limited political will to transform regular parking spots for other uses.

Capacity is the next highest challenge. Out of all interviewed cities and workshop attendees, mainly Dutch representatives reported that more than five colleagues are actively working on logistics. For a vast majority there is one to two civil servants having urban logistics in their portfolio/job description. Looking at the cities of Gdynia in Poland, and Bologna in Italy, both cities have one person from the mobility departments respectively working on urban logistics as one of their responsibilities.

Some Local authorities remedy to the lack of in-house capacity by going for external support to develop a Sulp, this was for instance the case at the Metropolitan City of Bologna. This strategy can lift some

of the work efforts from the staff however potentially reduces the in-house learning and connection building between the ecosystem and the administrative staff.

Connected to the lack of capacity, there is also a lack of collaboration and alignment across departments. Taking the example of the city of Gothenburg in Sweden, where three departments are involved in urban logistics, clear responsibilities and connections are established between the planning department and the urban environment department. Yet, the city development department is not having dedicated staff working on logistics and collaboration with the other two departments remains ad hoc, showing that logistics remains secondary in new neighbourhood development projects and plans.

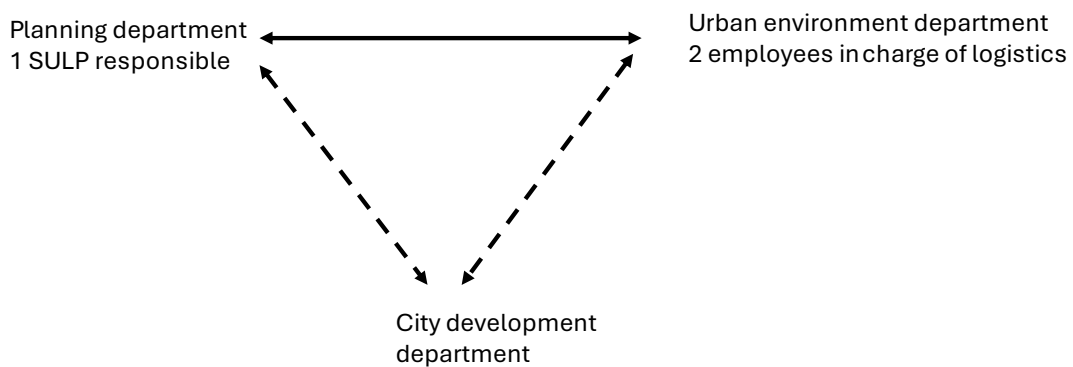


Figure 3: Departments engaged in urban logistics in the city of Gothenburg

Further perceived challenges when developing SULPs encompass the lack of data, leading to difficulty in assessing situations and also in the evaluation of measures' effectiveness. This can also lead to difficulties in presenting concrete facts to political representatives. The question of data availability is the most recurring challenge reported by representatives of local authorities, which is an important hurdle in the elaboration process of a plan but also for the monitoring and evaluation of actions.

Concerning e-commerce relevant data, cities express interest in knowing more about delivery heat points of different companies, having a better understanding of routes, load factors and types of goods being delivered.

While data sharing between the private sector and local authorities remains a key hurdle, some cities gather their own data sets through ICT infrastructure. Gothenburg will soon launch a pilot project to gather baseline data on logistics traffic through the use of AI cameras. In the framework of the LowGistics project, the Metropolitan City of Strasbourg is aiming to establish a logistics observatory to collect relevant data. Several ongoing EU-funded Horizon Europe projects (i.e DISCO) are tackling the issue of trust and data sharing, looking at coordination and governance models blockchain technologies and data spaces that can help local authorities setting up the right preconditions for data sharing from and with private actors.

Finally, local representatives also underline the lack of habits in the dialogue between public and private actors to collaboratively define SULPs. Recurrent dialogues can be seen as time consuming efforts for private sector, especially for smaller companies, which can lead to an overrepresentation of bigger players interests. Those aspects will be further elaborated in Chapter 3.4.

As the logistics sector continues to evolve, driven by digitalisation, decarbonisation, and new consumer patterns, cities must ensure that their planning tools evolve accordingly, hence the need for regular updates.

3.1.1.1 Status of CodeZERO Pilot cities

A closer look at cities involved in the CodeZERO project illustrates the diversity of approaches to logistics related strategic planning. Utrecht and Milan stand out for having developed a dedicated Sulp, reflecting the cities’ broader ambitions for sustainable transport and low-emission zones. The Metropolitan City of Milan adopted a Sulp in 2023 (Piano Urbano della Logistica Sostenibile), while the municipality is expected to define its own strategy in the coming years. Antwerp, in the Flanders region of Belgium, is also advancing a sustainable urban logistics plan – which still awaits a formal validation by the board of Alderman. While not having a formal Sulp, urban logistics in Oslo (Norway) is being integrated into mobility plans. However, the absence of plans doesn’t hinder the engagement of these cities in urban logistics matters either through specific measures, collaborations or projects.

Antwerp	Oslo	Milan	Utrecht
Sulp in the making	No Sulp but a Green Mobility Plan (based on Sump principles) with logistics measures is in the making	Sulp	Sulp

Table 1: SulpS in CodeZERO pilot cities

The administrative capacity on urban logistics varies also substantially across the pilot cities. Utrecht has three policy employees, five project managers, and two logistics brokers with temporary program funds (four years). In Antwerp, the ‘Smart Ways to Antwerp’ team is in charge with two staff, while in Oslo one person is actively working on logistics in the Environment Agency.

Data collection is more consistent across the pilot cities. In **Antwerp**, public authorities currently collect general mobility data, for instance through camera systems. However, this does not amount to a comprehensive logistics-specific approach. To expand logistics data collection, the municipality must navigate privacy, technical, and jurisdictional challenges.

Similarly, **Oslo** does not currently collect logistics-specific data directly. The city’s ring road tolling system provides an overview of vehicles entering Oslo but does not offer visibility on internal movements. The municipality is now in discussions with major companies about potential data-sharing agreements to better understand logistics activity within the city. For this collaboration to be successful, mutual benefits will need to be clearly demonstrated.

Milan is a rather advanced city in terms of logistics data collection and analysis. AMAT, the municipal agency responsible for territorial and mobility analysis, collaborates with the Polytechnic University of Milan to model various aspects of the city’s logistics ecosystem. Milan also monitors traffic flows within low-emission zones using ANPR cameras and supplements this data with TomTom traffic information, alongside surveys and interviews conducted by local universities.

Utrecht collects and makes use of some logistics-related data. The city piloted the use of parking cameras and sensors to monitor the use of loading zones, yet due to high costs and reliability issue this will be discontinued. Enforcement mechanisms are in place to issue fines for vehicles accessing restricted areas outside permitted time windows, or without proper authorisation. Licence plate data can also be matched with company activity, offering the potential for a more quantitative understanding of

logistics traffic. However, the use of such data is limited by privacy regulations, and the city currently lacks sufficient data to reconstruct the routes of logistics service providers (LSPs) or to identify the most frequently used corridors. Unlike some other cities, Utrecht has managed to engage in constructive dialogue with LSPs. As a result, some companies have selectively shared useful data, which the city has used to generate insights such as company-specific heatmaps. LSPs are generally willing to share data when they see a clear benefit from doing so. In addition to current data sources, the city is interested in accessing more precise information, including exact delivery routes and stop locations, real-time visibility of vehicle movements, and broader delivery patterns across the logistics sector. This more detailed data would help Utrecht to design more effective regulations and incentive schemes.

3.1.1.2 Case study and supporting tools

Milan collecting data in collaboration with the University

Milan is one of Italy's main e-commerce hubs, accounting for an estimated 8-10% of national online purchases. Yet the city still faces major gaps in understanding how these flows translate into vehicle movements, emissions, and impacts on public space. With limited access to data from private operators, such as Amazon, which does not share its logistics data, the city has turned to local partnerships and targeted data sources to fill the gaps. A key actor in this effort is the Polytechnic University of Milan. Together with the municipality, it leads a Technical Working Group dedicated to understanding the scale and patterns of urban deliveries. Using surveys, interviews, and business engagement, the group estimates that Milan sees around 150,000 B2C deliveries and 30,000 B2B deliveries per day. While these are only snapshots, they provide an emerging evidence base to guide local policy. The city complements these insights with traffic data purchased from TomTom and number plate recognition from its Limited Traffic Zones (Area B and Area C). However, Milan still lacks real-time tracking and detailed knowledge of logistics routes, stops, and delivery efficiency once vehicles enter the city.

Despite this, Milan is advancing a proactive agenda for sustainable urban logistics. A legally binding Climate Plan, a SUMP, and a recently adopted SULP provide strategic frameworks. New policies restrict high-emission and large freight vehicles in central zones, and additional logistics measures are planned in upcoming traffic plan revisions. Yet efforts to regulate freight also face challenges, including legal appeals, resistance from operators, and limited infrastructure funding.

However, Milan is also developing its own best practice toolkit through the working group, drawing on national and international examples. The goal is to integrate better data, policy design, and business collaboration to build a more sustainable logistics system adapted to the city's dense, mixed-use environment.

Lessons learned

- Local collaboration helps filling data gaps: Working with the Polytechnic University provides valuable survey data and delivery estimates that the city cannot access through private operators.
- Basic tools support policy but are not enough: ANPR cameras and TomTom traffic data offer partial visibility, but Milan still lacks real-time tracking and detailed insight into last-mile operations.
- Most logistics flows remain opaque: Large operators dominate the market, yet do not share data with the city. This limits the city's ability to plan based on actual delivery activity.

- Resistance from stakeholders slows progress: New logistics regulations often face public opposition, legal appeals, or pushback from companies reluctant to change practices.
- Toolkits under development support long-term capacity: Milan is building its own best practice toolkit, using insights from research and examples from other cities to guide future logistics policies.

Adapting Sustainable Urban Logistics Plans to Uncertainty: Insights from the ULaaDS Project (2024)

Developing and implementing Sustainable Urban Logistics Plans (SULPs) is inherently complex, involving multiple stakeholders, unpredictable processes, and disruptive events. The ULaaDS project (2024) explored how European cities can embed adaptability into their SULPs to better cope with uncertainties such as political shifts, public opinion changes, technological innovations, or global disruptions like COVID-19.

The study combined literature review, analysis of policy documents, and fourteen expert interviews with policymakers. Three key findings emerged. First, policymakers are aware of the many uncertainties affecting urban logistics. Second, while political and societal uncertainties receive most attention, unexpected disruptions or technological shifts are often underestimated. Third, four methods are commonly used to address uncertainty: forecasting, foresight, testing, and consultation—each with strengths and weaknesses.

ULaaDS proposed an “adaptive Sulp-cycle” to strengthen policy resilience. It supplements the existing EU Sulp framework with strategies such as raising awareness of system complexity, systematically mapping uncertainties, integrating adaptive principles into policy design, improving robustness of measures, and acting responsively during implementation.

The study concludes that building adaptive capacity requires resources, reliable data, and stakeholder engagement. With shorter feedback loops and flexible strategies, SULPs can shift from linear planning towards a dynamic framework that accommodates multiple possible futures.

Read the full study here : [ULaaDS D6.4: A novel framework on strategic decision making for SUMP or SULPs for adaptive urban logistics systems](#)

Existing supporting tools

- [Topic Guide - Sustainable Urban Logistics Planning \(2019\)](#)
- ULaaDs - **Deliverable 6.2: Guidelines, methods & policy recommendations to integrate ULaaDS in SUMP and Sulp processes**
- DISCO launched the Urban Freight Dataspace (UFDS), providing a secure digital environment for real-time logistics data sharing and operations support. A demonstration webinar is also available to showcase its functionality. [DISCO](#) also introduced the [Meta Model Suite](#), a structured approach to guide cities in implementing DISCO-X measures through configurable digital tools and evaluation frameworks.
- SENATOR finalised its [Smart Operator Platform](#), enabling secure, GDPR-compliant data governance. The platform enables integration of multiple logistics stakeholders through anonymised and secure information.
- Heitz, A., & Berthon, J. (2025). In search of operational tools in urban planning for the development of urban logistics spaces: the case of logistics urban design in Paris. *Transportation Planning and Technology*.

3.1.2 Adapting zoning and land use tools

Having well-defined policy objectives and a Sulp is an essential step toward creating cleaner and more efficient cities. However, translating these strategic goals into spatial reality through land use planning remains a significant and often overlooked challenge. While logistics is increasingly acknowledged in urban policy, its spatial needs are frequently neglected in land use plans, which are crucial instruments for the concrete implementation of Sulp measures. In many cities, land use regulations remain outdated, both in terms of the data used and the mapping of existing logistics activities. Moreover, the categories that define what activities are permitted in specific zones often fail to reflect the evolving nature of urban economies and the increased need for logistics operations. With the shift toward e-commerce and the decline of traditional industrial functions within cities, there is a growing need to rethink urban space, especially when it comes to enabling efficient and sustainable last-mile logistics. This spatial dimension is not only about accommodating logistics but also about exploring multifunctionality. As urban areas become more compact and demands on space intensify, integrating logistics with other urban functions—such as housing, retail, or production—will become increasingly important.

Across Europe, some cities are already adapting their planning and zoning tools to better address the emerging needs of urban logistics. For instance, the Brussels Capital Region is currently revising its land use plan to better respond to urban logistics needs, acknowledging the growing importance of integrating logistics into broader urban development strategies.

In the Metropolitan City of Bologna, land use regulations have been used to limit the expansion of large warehouses. A Regional law (by the Regione Emilia-Romagna) of 2017 has established to achieve a “net zero artificialisation” by 2050. Then, in 2021, the Metropolitan city of Bologna approved the Metropolitan Territorial Plan, a planning tool aiming also at reducing land sealing in the metropolitan region area: this plan embraced the target of “net zero artificialisation” by 2050 and it established as a first step a limit of 3% of urbanized land for new developments, prioritizing urban regeneration and water permeation of soil in already built areas.

The Metropolitan City of Lille is examining how to adapt building permits and introduce sustainability requirements for new real estate developments, including provisions for logistics functions within buildings. Also in France, the Metropolitan city of Strasbourg has acknowledged the need to revise the relevant planning tools as one of the first actions in its Sulp. With the rise of so-called ‘dark stores’ and ‘dark kitchens’ in 2020, the city also took a strong stance to limit uncontrolled installation of logistics spaces and decided to prohibit the implementation of logistics spaces in the city centre unless defined differently in the local inter communal land use plan (Plan Local d’Urbanisme Intercommunal).

Other local authorities have begun regulating logistics spaces with a focus not only on environmental impacts but also on social sustainability and the well-being of logistics workers. The City of Barcelona provides a notable example. It has introduced regulations for quick commerce (or “dark stores”) requiring these businesses to obtain a licence. Bars and restaurants using quick delivery services are also subject to space requirements for delivery workers: those with a surface area between 200 m² and 300 m² must reserve 10 m² for delivery-related functions, while establishments exceeding 300 m² must allocate 5 m² per 100 m² for delivery workers. To further regulate dark stores, the city has introduced two options: businesses can either operate strictly as food warehouses without home delivery or convert into supermarkets that are open to the public.

The City of Bologna is also currently exploring ways to promote the multifunctional use of space in the city centre. While “local logistical spaces” are defined and potential sites mapped out in the Sulp, they

are not yet reflected in other planning instruments. To support logistics functions in these dense urban areas without compromising social uses, the city is examining how to incentivise logistics operators to propose models that better integrate their activities with other functions. Permitting processes could be one possible option. Examples of such integration efforts already exist at the building level. In Hamburg, for instance, a micro-hub has been established in a former kindergarten located in the same building of a social support centre. Facility costs are thus being shared between the logistics operators and the social organisation.

However, spatial planning alone cannot drive this shift. It must be complemented by enabling policy frameworks that support the emergence of more sustainable and even circular logistics models. Planning departments may identify opportunities for new logistics hubs or consolidation facilities, but these must be backed by broader regulatory and economic measures that guide logistics behaviour. Tools such as zero-emission zones (ZEZ), low-emission zones (LEZ), and urban tolling schemes play a vital role in incentivising cleaner delivery methods and encouraging the use of shared infrastructure. Without this combined approach—spatial provision supported by aligned policy instruments—the objectives outlined in sustainable logistics strategies risk remaining aspirational rather than operational.

3.1.2.1 *Status of CodeZERO cities*

The workshops and interviews held with CodeZERO pilot cities have shown that only the City of Utrecht has started examining how to further adapt land use and other planning tools. While no concrete regulatory implementation has happened, yet the administration is exploring how to map and classify different neighbourhoods according to their logistics needs. This is based on a recent study in the Netherlands where a typology with different archetype neighbourhoods was developed. For each neighbourhood type, the logistics footprint (number of vehicles during a day) was estimated and - if spatial conflicts occurred - tailored solutions have been suggested (see Kin et al., 2025; Topsector Logistiek & TNO, 2024). Looking into new development areas and car free areas, especially in the case of the planned Merwede neighbourhood, logistics was considered early on. In other area development without a car-free concept, the staff working on logistics still needs to get invited to the discussion table. It appears that logistics still remains secondary in the development and planning processes. Unlike other thematic sectors, the team working on logistics has been involved at a later stage in the planning process.

The work done within the pilot aims at elaborating further principles on steps and measures that need to be included in the planning of future new development areas.

3.1.2.2 *Case studies and supporting tools*

Case study - Brussels Capital Region and the update of the land use plan

In the Brussels-Capital Region, urban planning is a federal competence implemented by the regions and partially delegated to municipalities. As the region undergoes a revision of its general land use plan (Plan Régional d’Affectation du Sol – PRAS), logistics has emerged as a focus area, highlighting the complex interaction between land use regulation, evolving economic activity, and urban sustainability goals.

In previous planning cycles, logistics was identified as a critical yet under-addressed issue. Existing regulations often excluded logistics operations from industrial zones, forcing these activities into residential areas and contributing to inefficiencies and land-use conflicts. This misalignment has become even more apparent with the rise of e-commerce and the accompanying challenges of last-mile and reverse logistics.

To address these challenges, the Brussels Region is currently exploring various strategic options within its ongoing PRAS revision. The overarching objective is to better integrate productive functions—including logistics—into the urban fabric, and to adapt land use regulations accordingly.

Approaches Under Consideration

Several potential models for change are being studied:

- **Minimal Adjustments:** This involves making light regulatory adjustments to fix specific issues, such as allowing logistics operations in zones where they are currently banned.
- **Network-Based Zoning:** A more systemic option involves redefining land use through the lens of “material flow networks,” recognizing logistics as a spatial network rather than fixed-point zoning. This would allow for more fluid and integrated urban planning.
- **Detailed Zoning Revisions:** Another path is to introduce more fine-grained regulatory changes, potentially creating a “3D zoning system” that layers different functions vertically and allows mixed-use development.

At the heart of these strategies is the ambition to rethink the logistics backbone of the city through a hierarchical grid system, aligning different types of logistics activities (e.g., consolidation centres, distribution hubs) with appropriate infrastructure, such as rail and canal networks.

Strategic Areas and Pilot Zones

Key industrial areas, such as Schaarbeek Formation and the Audi industrial zone in Forest, are being reconsidered to accommodate mixed-use and logistics functions. One specific pilot project, Bistebroeck, set for 2027, explores a mixed model integrating logistics, industry, and residential functions—illustrating one direction for future urban development in Brussels.

Governance and Next Steps

The strategic orientations of the PRAS have been approved by the Brussels government, while the three planning scenarios remain confidential, and to be approved.

According to terms yet to be defined, the revision of the PRAS (Regional Land Use Plan) will aim to meet following criteria relevant for urban logistics:

- Revise the land use map based on the areas most suitable for accommodating a greater mix of uses, taking into account potential nuisances.
- Adjust the land use map in line with objectives for re-centralizing office spaces, and promote functional diversity in mono-functional office areas to enhance their attractiveness.
- Clarify the definitions of uses that can be assimilated to office activities, as well as those related to wholesale trade, logistics, and warehousing, and review thresholds/limits/protection mechanisms.

The Brussels Region is thus navigating a complex but forward-looking transition: adapting planning instruments to modern logistics realities while balancing liveability, sustainability, and economic viability in a dense urban context.

Mapping Logistics Spaces in Strasbourg: A Ground-Up Effort

Strasbourg has embarked on a comprehensive and highly detailed process to map logistics spaces across its territory—a task described as a long and painstaking journey, starting from a blank slate. With no existing baseline data, the city worked closely with its urban planning agency to carry out an extremely fine-grained diagnostic of logistics infrastructure.

As part of this effort, a bespoke database was created by ADEUS the Urban Planning Agency to capture all logistics spaces within the metropolitan area, ranging from as small as 50 m² to over

40,000 m². This level of precision sets Strasbourg apart; by comparison, similar studies in Lyon and Marseille have floor thresholds of 5,000 m² and 1,500 m² respectively. The relatively modest size of Strasbourg’s territory made it feasible to adopt this detailed, almost artisanal, approach. In total, 274 warehouses were identified through manual on-the-ground work.

This rich dataset allows the city to monitor trends such as changes in land use or the disappearance of logistics floor space over time—critical information for understanding the evolving urban logistics landscape. However, while this database forms a solid foundation for knowledge of the existing situation, it is not yet a planning tool in itself.

The next phase of the project focuses on understanding the land needs of businesses, while also identifying available plots that could meet those needs. The objective is to evaluate and qualify land plot by plot in terms of its suitability for logistics uses—a concept described as assessing the "logisticity" of each parcel. This dual approach aims to bridge the gap between current land availability and future logistics requirements, thereby supporting more informed spatial planning in the years to come. This research is done in collaboration with professors and PhD students from the Conservatoire national des arts et métiers (CNAM) in Paris.²

Existing supporting tools

- **UNCHAIN** - [Freight-Efficient Land Use- Interactive Guidebook](#)

3.2 Regulating sustainable urban logistics for e-commerce

Local authorities have several regulations at hand they can implemented and use as “stick” measures to push the market towards more sustainable practices. The following two chapters provide details on access regulations and curbside management measures that support shaping more restrictive conditions for polluting last mile deliveries.

3.2.1 Access regulation - Low and zero emission zones

In recent years, European cities have increasingly prioritised safer and cleaner urban transport and logistics systems as part of broader strategies to reduce air pollution and mitigate climate change. Access regulation based on weight or time restrictions are most common in European cities, others also introduced LEZs, which limit access to the most polluting vehicles within specific urban areas. Building on the experience with LEZs, a growing number of cities are now advancing plans for zero-emission zones for freight (ZEZ-F). These zones restrict access exclusively to zero-emission delivery vehicles, such as electric vans and trucks, or cargo bikes, and aim to significantly reduce emissions from last-mile logistics. Such zones offer a regulatory framework to stimulate investment in cleaner freight vehicles and services, and they are one of the policy levers helping to accelerating the decarbonisation of urban freight.

The potential impact of zero-emission zones is substantial. Research has shown that implementing ZEZs can lead to reductions of over 90% in greenhouse gas emissions and up to 95% in nitrogen oxide (NOx) emissions from traffic. These figures underline the environmental urgency and effectiveness of

² Adeline Heitz PhD, Associate professor in Urban Planning, Transport, Logistics CNAM – LIRSA, Antoine Fremont, Professor and Chairholder in Transport, Flows, and Sustainable Mobility, CNAM – LISE, Elliott Lenard, PhD Student in Urban Planning and logistics, CNAM – LISE. All are based in Paris, France.

such measures. To date, 35 European cities have officially committed to establishing zero-emission zones by the 2030s, typically beginning in central areas and expanding progressively to cover wider urban zones (Clean cities, 2024).

The Netherlands has taken a particularly structured approach, with several municipalities working alongside the national government to introduce ZEZ-Fs. These are being deployed as transitional measures that bridge existing LEZs and more ambitious targets for city-wide zero-emission zones covering all vehicle types in the future. Since January 1st 2025, Utrecht together with 16 other Dutch cities are implementing zero-emission zones³. Gradually, older vehicles will be banned from entering the city, starting with Euro 5 diesel vans in 2027 to allowing only emissions free vehicles in 2029. Quak et al. (2025) structurally documented and analysed how the city of Rotterdam organised the process towards the development of the ZEZ-F.

However, the implementation of these zones is not without complications. Political resistance has emerged in several national contexts, underscoring the importance of supportive national frameworks. For instance, recent developments in France have seen national legislative changes that threaten the continuation of low-emission zones. In Spain, the High Court of Justice in Madrid recently annulled the city's LEZ, a decision that risks undermining long-standing progress in sustainable mobility (POLIS, 2024). Meanwhile, Norway faces legal constraints that prevent cities like Oslo from enforcing a zero-emission zone. Legal uncertainties, political backlash, and uneven national support frameworks remain significant barriers to the widespread deployment of ZEZ-Fs. Other concerns are the market availability of Zero Emission HDVs as well as the availability of fast charging infrastructure for HDVs. The size of ZEZs must be well defined and larger zones offer more predictability for the private sector to adapt. Finally, the fairness for both large and especially small operators is difficult to guarantee with such regulation without compensating measures (Transport Decarbonisation Alliance, 2023).

Yet, the growing number of pioneering cities, supported by the increasing availability of clean vehicle technologies, suggests that zero-emission freight zones are one of the central measures helping local authorities to foster more sustainable last mile deliveries.

When implementing access regulations local authorities face several key challenges. One major concern is ensuring the coherence of Urban Vehicle Access Regulations (UVARs) across the territory to prevent backlash from the logistics sector, as city representatives frequently express fears about potential negative impacts on the urban economy. Additionally, the involvement of relevant stakeholders—such as fleet managers, smaller companies, local shops, and delivery operators—is vital to building acceptance and ensuring practical feasibility.

Timing also plays a critical role, with the need to allow sufficient time for affected stakeholders to adapt and for fleet renewal to take place. The establishment of a clear legal framework, alongside alignment between different institutional levels, is essential to ensure effective and enforceable implementation.

Proper information provision is also seen as crucial factor for the successful adoption of the access regulations. The city of Ghent in Belgium digitized all access regulations, (un)loading zones, school zones. This data is integrated into the dataspace of the DISCO project.

³ Zero Emission Stadslogistiek <https://www.opwegnaarzes.nl/bedrijven/waar-komen-de-ze-zones>

Finally, supporting mechanisms to facilitate fleet transition, including financial incentives, technical guidance, or access to necessary infrastructure, can help ease the burden of compliance and promote broader adoption.

3.2.1.1 Status of CodeZERO Pilot cities

All CodeZERO pilot cities have access regulations. Antwerp's city centre and the Linkeroever (Left Bank) is a LEZ whether the most polluting vehicles are not allowed to enter the city. Next to that, the city of Antwerp takes complementary actions to incentivising behavioural change, the city thus developed a freight route planner for heavy trucks to avoid specific areas such as school street pedestrian areas, sharp bends etc.

The municipality of Utrecht permits loading and unloading by vehicles not yet subject to the zero-emission ban between 6:00 AM and 11:30 AM. Outside of these hours, logistics vehicles are generally not allowed to enter, with the exception of electric or biogas-powered vehicles under 3.5 tonnes. These vehicles are permitted access until 12:00 PM, and again between 7:00 PM and 9:00 PM. On Thursday evenings, this access is extended until 11:00 PM.

In Milan there are two major Limited Traffic Zones (LTZs) areas. Area B covers which approximately 70% of the city, restricting access for high-emission vehicles and trucks over 12.5m. Area C encompasses the historic centre and has stricter limits, banning freight vehicles over 7.5m and restricting access between 08:00–10:00. Finally, smaller LTZs exist in some neighbourhoods with time-based access rules.

In Oslo the LEZ covers the entire urban area with exception of the highways and main streets of the Ring 3, E6, E18, Trondheimsveien, Østre Aker vei, Strømsveien. Interestingly, next to the LEZ there is a city toll, depending on the type of vehicle and fuel, there are different amounts to pay. Electric vehicles are not exempted. In the framework of the BuyZET Project, next to the cities of Rotterdam, and Copenhagen, Oslo involved their suppliers, large and small, in an open dialogue to avoid concerns about decline in business for local shops. This highlights the importance of collaboration arounds those measures (Transport Decarbonisation Alliance, 2023).

Antwerp	Oslo	Milan	Utrecht
Time based vehicle access	Time based vehicle access	Low emission zone	Time based vehicle access
Low emission zone	Low emission zone	Restriction based on length	Weight based access
Freight route planner	City Toll		Low emission zone
			Smart access

Table 2: Access regulations in CodeZERO pilot cities

3.2.1.2 Case study and supporting tools

Utrecht's access regulations for logistics

Utrecht has adopted a comprehensive approach to achieving what it refers to as “zero impact logistics”—an urban logistics system that not only eliminates emissions but also reduces noise, congestion, and the use of public space. As of 1 January 2025, the city—together with 16 other Dutch municipalities—has begun implementing a ZEZ. This transition is being phased in gradually: from 2027, Euro 5 diesel vans will no longer be permitted, and by 2029, only zero-emission vehicles will be allowed to operate within the designated area.

The introduction of the ZEZ, alongside tighter regulations on logistics vehicle access, is intended to ease congestion and enhance urban liveability. Access for loading and unloading is permitted only between 6:00 and 11:30 in the morning for vehicles not yet subject to the zero-emission requirements. Outside of these hours, delivery access is restricted, except for electric or biogas vehicles under 3.5 tonnes, which are granted additional access between 12:00 and 14:00, and again between 19:00 and 21:00. On Thursday evenings, this window is extended to 23:00 for qualifying vehicles.

In addition to these regulatory measures, Utrecht has introduced a number of incentives to promote cleaner and more efficient logistics operations. LSPs engaged in consolidation—where multiple deliveries are grouped into a single, fuller trip—are granted exemptions from time restrictions and are permitted to access the city centre outside standard delivery hours. These vehicles may also be authorised to use bus lanes, which are typically less congested. The aim is to encourage more efficient vehicle use, reduce the number of trips, and in turn, minimise environmental and spatial impacts.

To support enforcement and planning, Utrecht collects data on logistics activity through its existing ICT infrastructure. Parking sensors and cameras monitor loading zones, enabling the city to enforce time and vehicle restrictions through fines. Licence plate recognition can be linked to company data, offering insights into the types of logistics traffic entering the city. However, data privacy regulations impose limits on how this information can be used, and current data collection does not yet allow for a complete reconstruction of logistics routes. Nevertheless, these systems provide a valuable foundation for understanding and managing urban logistics more effectively.

Existing supporting tools

- Urban Access Regulations in the EU: [Link](#).
- [Topic Guide - UVARs and SUMPs](#)
- ULaaDS - Low emission zones and urban logistics how can we make it work. [Read more](#).
- UVAR box: [Link](#).
- [SURFfreight-e-course](#) on Zero-Emission Zones for freight. [Link](#).

3.2.2 Curbside management

Urban public space encompasses a wide array of shared environments such as parks, squares, boulevards, and streets. Among these, streets—including roadways, curbs, and pavements—account for more than 80% of the public space in most cities. As cities grow more complex and densely populated, competition over this space has intensified, particularly in relation to the use of the curbs.

In the context of urban freight, the curbside has become a critical yet contested zone. It is where goods are typically loaded and unloaded, but also where a growing number of other uses must be

accommodated. The demands range from on-street parking for private vehicles, space for pedestrians and cyclists, designated areas for outdoor dining and public seating, docking stations for micro-mobility services, and stops for public transport, to zones for utility and construction services. As urban logistics continues to expand—driven in large part by the surge in e-commerce—this pressure on limited curbside space has led to friction between users and raised questions about how cities can effectively and fairly manage access to this vital urban asset (Castrellon, J., P., Sanchez-Diaz, I., 2024).

Historically, freight activity has not received the same degree of attention as other urban mobility functions within city planning frameworks. Urban policies often prioritise liveability and environmental sustainability without fully integrating the logistics needs (Williams & Carroll, 2015). As a result, there is an urgent need to reassess how last-mile freight deliveries are accommodated within constrained street environments.

The evolving notion of "freight curbside management" has gained traction in academic and policy discussions. This approach encourages cities to rethink how kerb space is allocated, proposing more dynamic and adaptable systems that respond to changing demands and maximise the functionality of limited street space. The aim is not only to improve the efficiency of freight operations but also to ensure that such activities do not undermine broader environmental or social goals (Castrellon, 2023).

Exemplifying for this trend is Munich's Mobility Department which in 2022 created 33 new designated parking spaces in the city centre to improve conditions for commercial traffic—specifically for loading, deliveries, and service work. The first 28 spaces, marked in orange with a handcart symbol, are being introduced at 12 locations in the "Blue Zone". These areas are reserved for loading and unloading, with additional access for tradespeople holding a valid permit. Outside working hours (from 7 PM to 8 AM on weekdays, and all day on weekends and public holidays), residents with a city centre permit may also use these spaces. The initiative aims to reduce double parking and improve overall road safety. MünchenUnterwegs, 2022).

Several cities across Europe have piloted so called smart booking system with often limited success. This is the case in Funchal (Portugal) and Hamburg (Germany). Since 2020, the city of Hamburg has indeed tested Smart Loading Zones (SLZs) in real-life traffic conditions as part of the SmaLa project. As per Mian (Italy), challenging parts were the high costs due to digital screens which required electricity from the ground, finding appropriate locations, as there are physical and design requirement, as well as difficulties in avoiding illegal parking bundled with a lack of capacity to enforce legislation (Forthcoming, 2025). In Funchal the latter has been the main reason not to pursue with the smart loading zone. Barcelona (Spain) seem to be one of the more successful cases in the so-called green streets all commercial vehicles are able to load and unload in the central section of green streets (not on the corners) and in a line (in single file, on one side of the street , leaving enough space for the rest of vehicles to continue to go past). In addition, there are time and duration restrictions. Finally, Loading and unloading operations must be validated using the SPRO app, the smart booking application (Barcelona, 2023).

3.2.2.1 Status of CodeZERO Pilot cities

All pilot cities have defined loading and unloading zones through their parking regulation. Besides, in Oslo test have been running on flexible use of public space. In fact, certain areas serve as loading and unloading zones at specific times and become outdoor restaurant spaces later. However, there are limitations for the multifunctional use of such spaces as the Norwegian law requires static signage, meaning digital and dynamic curbside management is not yet possible. Next to the flexible use of

loading zones, the city also piloted extended delivery time windows in one pedestrian street (from 11:00 AM to 12:00 PM) to limit peak-hour congestion.

In Utrecht the management is technologically more advanced compared to the other pilot cities, as the city is implementing smart loading zones with parking sensors and smart plate recognition to facilitate access and real time information provision. In addition to these measures, Utrecht has also introduced several incentives. For example, vehicles engaged in consolidation activities are exempt from the time-restricted access rules for the city centre. LSPs carrying out consolidation can apply for and obtain exemptions allowing access beyond the designated time windows. Furthermore, these vehicles may also be authorised to use less congested bus lanes.

Antwerp	Oslo	Milan	Utrecht
Loading zones	Loading zones Pilots on flexible loading zones and extended delivery time.	Loading zones	Smart loading zones Priority for e-vans/consolidated goods on bus lanes

Table 3: Curbside management in CodeZERO pilot cities

3.2.2.2 Case study and supporting tools

Implementation of a Smart Loading and Unloading Management System in Verona (Italy)

As part of the GRETA project, the Verona freight village, coordinated by the ZILOG research department, is collaborating closely with the Municipality of Verona to improve urban logistics through the development and implementation of a smart management system for loading and unloading operations. This initiative reflects a longstanding and productive cooperation between ZILOG and the Municipality, which is also a shareholder in the freight village.

The current project focuses on a dense, sensitive area in Verona that includes the historical LTZ, characterized by narrow streets, heavy congestion, a high volume of commercial activity, and significant tourist presence. The LTZ is already controlled via license plate recognition cameras, and the surrounding four districts are also included in the pilot area.

Under the GRETA project, 211 sensors are being installed beneath the asphalt—one for each designated loading and unloading zone within Verona’s Functional Urban Area (FUA). The data collected from these sensors will be integrated into a software platform developed by an IT provider selected and coordinated by ZAILOG. The platform allows LSPs to book parking slots marked with yellow lines exclusively for loading and unloading operations.

This booking system will help optimize delivery schedules and reduce issues such as double parking. Shippers can reserve specific time slots, such as 10:00 to 11:00 AM, for their deliveries. Initially, any van will be allowed to book slots, though there are future plans to ban diesel vehicles from the city centre entirely. As of September, Euro 5 diesel engines are already banned.

To ensure proper signal coverage for sensor data transmission, LoRa antennas are being installed, though some areas currently lack sufficient signal strength. A promotional campaign is being planned to demonstrate the benefits of the new system to logistics operators.

One of the anticipated challenges is enforcement. Operators may find the system restrictive, fearing it could lead to more frequent checks by municipal police. However, the platform should include a

monitoring mechanism that alerts users if a vehicle is occupying a booked slot without authorization. While this does not result in an automatic fine, it may affect a transport company's future access to the LEZ, serving as a kind of "yellow card".

The management of the platform will be handled by AMT3, an in-house company of the Municipality of Verona that oversees all parking spaces in the city. ZAILOG coordinates between AMT3, the IT providers, and the municipality. Once operational, the platform will be fully transferred to the municipality for long-term management and maintenance, which will be financed by the city.

Importantly, the number of loading and unloading zones will remain the same.

Currently, there is no available data on parking infractions at loading and unloading zones prior to the installation of the system. Implementation and testing of the new system are scheduled to begin in September or October 2025.

Existing supporting tools

- FlexCURB focuses on improving urban logistics by enabling sectoral collaboration and tailors tools to improving the way city logistics are currently understood, coordinated, and regulated. The FlexCURB Driver App provides freight partners with:
 - up-to-date information about parking rules and curb regulations;
 - access to delivery locations by planning freight movements based on location of loading areas;
 - curb reporting and insights. [Read more.](#)
- Study: *Effects of freight curbside management on sustainable cities: Evidence and paths forward* (2024) by Juan Pablo Castrellon, Ivan Sanchez-Diaz. [Read more.](#)

3.3 Supporting last mile solutions

The third types of levers cities can use to foster more sustainable delivery and return practices are related to the management of the last mile. While cities might not necessarily be implementing measures such as lockers or micro-hubs, they have their role to play either in facilitating dialogue between actors or the provision of or regulating of space. The following chapters provide an overview of ongoing practices and lessons learned on supporting last mile solutions.

3.3.1 Lockers

Across Europe, the deployment of parcel lockers has become increasingly common as logistics service provider explore efficient and sustainable alternatives to home delivery. These lockers are now found in a wide variety of locations including public transport stations, supermarkets, fuel stations, and residential neighbourhoods. Their rising popularity reflects both consumer demand and the evolving logistics strategies of parcel operators.

One of the most significant advantages of using parcel lockers is the limitation of missed deliveries. Unlike traditional home deliveries, where recipients may not be present, lockers allow parcels to be collected at the recipient's convenience. This shift in delivery model also enhance efficiency by saving time and kilometres driven: while a typical courier might deliver between 80 to 120 parcels per day—occasionally reaching up to 200—the use of lockers can increase this number dramatically to as many as 800 parcels per day (with the limitation that not many vehicles can hold 800 parcels at once) (Mommens, Peeters et al., 2022). Furthermore, lockers allow for parcel pick-up and drop-off to occur simultaneously and can support optimised logistics such as overnight deliveries as well as return flows.

Research from Belgium highlights the environmental advantages of using collection points, particularly in dense urban settings. The sustainability of these systems, however, is influenced by factors such as the proximity and density of lockers as well as the extent to which consumers make dedicated trips to retrieve parcels (Mommens, Buldeo Rai et al., 2021). A modelling study in the Netherlands shows that if only a small proportion of consumers use a car to go to a pickup point, direct home deliveries have a lower impact in terms of emissions and other environmental impacts (Niemeijer & Buijs, 2023). Therefore, the location of lockers and the behaviour of consumers is crucial in determining their contribution to more sustainable last-mile logistics.

Development approaches for lockers vary widely across Europe, shaped by national and local regulatory contexts. In some cities, locker rollouts occur through a free-market approach. This is especially the case in Poland, where the availability of space in post-soviet urban fabric leads to a burst in private rental for lockers. Other cities apply more oversight, requiring permits for installations even on private land. Some municipalities have gone further, creating regulatory frameworks specifically for lockers in public spaces, sometimes prohibiting their installation on public ground entirely, as in the case of Strasbourg for instance.

Given these diverse regulatory settings, the role of municipalities in the levers at hand change across Europe. Ideally, cities should develop a strategic vision for the integration of lockers into the urban landscape and ensure their deployment effectively leads to more sustainable practices. This includes ensuring that locker locations comply with safety, noise, and parking requirements, and that they do not disrupt pedestrian flows or contribute to congestion. Moreover, careful planning is needed to ensure that locker locations are optimally placed to serve both operational and environmental goals. Cities can facilitate the location finding by mapping out potentially fitting locations. Those need then to be counter-checked with the LSPs.

Parcel lockers can be a solution to logistical and environmental challenges associated with last-mile delivery. However, their effectiveness depends on the level of integration they offer (white labelled locker vs. branded lockers) and their strategic location to avoid extra trips for the LSP and the customer (ULaaDs, 2022).

Several trade-offs exist where different interests are partially compatible and partially divergent. Examples include distributor-specific vs. open networks and implications for efficiency, traffic, environment, and effective use of scarcely available land.

Network density beyond a 'saturation point' can, yield delivery fragmentation and adverse traffic effects, even though it may yield more convenient collection for recipients.

3.3.1.1 Status of CodeZERO Pilot cities

In all pilot cities parcel lockers are only allowed so far on private ground or through a case-by-case approval.

Antwerp	Oslo	Milan	Utrecht
Parcel lockers on private ground only	Parcel lockers on private ground only	Parcel lockers on private ground only	Parcel lockers on private ground only, expect specific pilots

Table 4: Status of CodeZERO pilot cities regarding parcel lockers

3.3.1.2 Case study and supporting tools

Gdynia – Navigating the Boom of Parcel Lockers in Poland’s “Locker Land”

In recent years, Poland has witnessed a rapid proliferation of parcel lockers, becoming one of Europe’s most saturated markets for out-of-home delivery infrastructure. The city of **Gdynia** exemplifies this trend, where the growth of lockers has largely outpaced urban planning, regulation, and coordinated logistics strategy.

A Market-Driven Locker Landscape

Poland is often referred to as “locker land” due to its widespread network of more than **13,000 parcel lockers** managed by major LSPs. In addition to lockers, there are over **15,000 pick-up points**, often in close proximity. Each LSP typically operates its own proprietary locker network, leading to a clustering of competing lockers in the same locations, driven by availability of physical space rather than a coordinated strategy. In Gdynia’s central square, several such lockers from different providers sit side-by-side, forming an **unplanned last-mile hub** with no consolidation of deliveries.

This development has occurred **without the need for construction permits**, as placing a locker on private land only requires a basic notification. There are no legal restrictions on locker placement as long as they are on private property (even when the front of the locker is facing outwards, for example to the sidewalk) which has led to lockers being installed wherever there is an available plot—often without integration into surrounding land uses or mobility planning.

Public-Private Dialogue and Missed Coordination

Efforts have been made to coordinate more sustainable placement. A **working group** between the city and InPost, one of the largest parcel locker operators, explored the possibility of placing lockers on **municipal land**. The company offered to deliver ecological benefits in exchange for access to public plots. However, the collaboration faced **significant implementation barriers**. Site visits to 15 proposed municipal locations revealed that many were already adjacent to privately owned lockers or unsuitable due to local constraints.

These difficulties exposed a **lack of clear urban vision** or regulatory framework for locker deployment. The city administration often found itself **a step behind** private operators, whose lockers were already in place by the time public discussions took shape. Even when feasible sites were identified, the lack of a broader parcel locker policy or integration into city planning hindered progress.

Regulatory and Legal Limitations

Regulating the expansion of private lockers remains legally and politically complex. Because lockers are often installed on private property, local authorities have **limited control**. Even when public land is indirectly involved—such as municipal pavements providing access—legal recourse is costly and time-consuming. The **saturation point** for lockers is nearing, raising concerns about **urban space fragmentation** and the **emergence of parcel-only storefronts** without strategic integration.

The municipality has explored indirect regulatory levers and **access restrictions based on vehicle weight are now enforced**. While Gdynia currently has no low-emission zone in place, **weight-restricted areas** are being considered to mitigate the impact of freight vehicles associated with locker delivery. However, enforcement remains a challenge, and tools such as bollards risk shifting problems rather than solving them.

Missed Opportunities and Political Barriers

Gdynia had been developing a new **parking policy** to include provisions for loading bays, aimed at better managing freight activity. However, political shifts have **halted progress** on this initiative. Broader objectives such as managing urban entry points, minimizing heavy vehicle damage, and embedding freight regulation into political agendas remain **unrealized goals**. The city’s main focus continues to be on **parking availability**, with freight logistics still underrepresented in urban policy.

Existing supporting tools

- UlaaDs – Finding the right space for urban logistics a framework for open parcel locker systems. [Read more.](#)
- Digital Twins for last-mile low-emission logistics (2023). [Policy recommendations from the LEAD EU-funded project](#), and additional learning available in the [Massive Open Online Course \(MOOC\)](#) titled “Unlocking the potential of Digital Twins for sustainable on-demand urban logistics”.

3.3.2 Logistics micro-hubs

The rise of logistics micro-hubs in European cities is due to a set of changing contextual conditions. As seen in previous chapters, cities across Europe are increasingly introducing access regulations, including LEZs and ZEZs, in response to environmental concerns and congestion. These measures are influencing how goods are transported and delivered in urban areas. This is further enhanced by policies to limit access by cars and (re)development of areas with a low car ownership. At the same time, the logistics sector is experiencing record demand for space (McLaughlin, 2022). The growth of e-commerce plays a significant role in this trend. According to Prologis (2019), e-commerce operations require three times the amount of warehouse space compared to traditional retail models (McLaughlin, 2022). This growing demand is set against a backdrop of increasing competition for urban space.

As a result, logistics facilities are being pushed to peripheral locations outside city centres (Dablanc et al., 2014). This spatial displacement contributes to longer delivery routes and complicates the organisation of last-mile logistics, particularly in constrained B2C delivery streams. To address these challenges and operate more efficiently within restricted city environments such as LEZs and ZEZs, the concept of logistics micro-hubs has emerged. Micro-hubs offer a potential solution by enabling better consolidation of inner-city deliveries (Aljohani & Thompson, 2016; Onstein, Bharadwaj, Tavasszy, van Damme and el Makhloufi, 2021). More recently we see a reoccurrence of such facilities in dense urban cores, termed ‘proximity logistics’ by Buldeo Rai et al. (2022).

Micro-consolidation initiatives, though defined in various ways, generally share a set of common characteristics. As described by Kim and Bhatt (2019), delivery micro-hubs act as urban consolidation points with a smaller physical footprint and can also specifically serve a specific site (e.g., shopping mall) or neighbourhood. Positioned between a large suburban warehouse and the final delivery destination, they facilitate last-mile deliveries often using cleaner, more sustainable vehicles. A delivery micro-hub can take the form of a fixed building or a mobile structure and may be used by one or multiple operators. Verlinde, Macharis, and Witlox (2012) refer to these facilities as “alternative” transshipment points that scale down the consolidation function of a typical Urban Consolidation Centre (UCC). The Urban Freight Lab (2020) further defines micro-hubs as a specific type of UCC characterised by closer proximity to the delivery point and a smaller service area. They note that micro-hubs are logistics facilities where goods are grouped within the urban boundary, supporting a shift to low-emission or soft transport modes.

Cities can play diverse roles in supporting the development and implementation of micro-hubs, acting as facilitators, enablers, and infrastructure providers. Several local authorities across Europe have already taken active steps to support such initiatives. In Munich (Germany), the city helps logistics operators identify and secure appropriate spaces for micro-hub development. Prague has made public land available on a trial basis—such as areas beneath bridges—to test micro-hub solutions in real-world conditions. Municipal support can also extend to facility management, often through city-owned parking companies that oversee logistics infrastructure. In Paris (France), click-and-collect facilities have been

introduced in residential neighbourhoods, including locations run by Auchan. These not only serve as micro-hubs for parcel pick-up but also function as informal rest areas for gig economy delivery drivers. Rimini (Italy) has developed refrigerated micro-hubs to accommodate temperature-sensitive goods (Gel Proximity, 2025), demonstrating the importance of adapting infrastructure to various types of logistics needs. Innovative approaches such as the “mobility hotel” in Gothenburg (Sweden) and Oslo (Norway) show how cities can support micro-hubs with adjacent services. These facilities provide access to leasing, storage, and repair infrastructure, helping operators transition to more sustainable delivery models. Here the local authorities supported the hubs with initial financial support and connecting the relevant private actors.

Cities play indeed a key role in brokering partnerships between LSPs and facility managers such as parking operators. Cooperation models with emerging actors are proving effective in optimising resources. For example, APCOA, the largest EU parking lot operator, is repurposing parking infrastructure to support e-cargo bike logistics, offering added-value services like parcel lockers, EV charging, and shared mobility options. Such models promote cost-sharing among different users who access the same space or services, increasing the viability of micro-hubs in urban environments. In essence, such locations become multifunctional with, for instance, mobility hubs that also include logistics functions such as pick-up services, temporary storage and charging electric vans of commercial companies.

In the Brussels Capital Region (Belgium), enabling factors and regulatory frameworks are recognised as critical to micro-hub feasibility. Feasibility studies suggest that the success of larger consolidation or micro-hub centres depends on complementary measures such as urban tolling or access restrictions, which can help manage vehicle flows and encourage logistics consolidation.

3.3.2.1 Status of CodeZERO pilot cities

Utrecht has an active urban logistics consolidation policy. Companies that consolidate goods get exemption to enter anytime instead of window time and can use bus lane. In Oslo the municipality has engaged in a lot of discussion around developing micro-hubs and supporting consolidation. The Fernebu hub is another example of consolidation with local support in the Metropolitan area of Oslo that has started promising operations. Neither Milan nor Antwerp are actively engaged in the deployment of a publicly funded hub at this point in time.

Antwerp	Oslo	Milan	Utrecht
Privately run micro-hubs	Public private collaboration Mobility hotel supported by EU funding, privately run micro-hubs	Privately run micro-hubs	Consolidation hub, privately run

Table 5: Status of CodeZERO pilot cities regarding micro-hubs

3.3.2.2 Case study and supporting tools

Kaia Mobility Hotel in Oslo

To reduce traffic and emissions in its dense city centre, Oslo is testing new business models to shift logistics from vans to more sustainable options like bicycles and cargo bikes. The Kaia Mobility Hotel is a flagship initiative developed in the framework of the EU funded project MOVE21 that supports this transition by offering storage, repair, charging, and rest facilities for delivery bikes. Located in an area identified for future zero-emission status, the hotel enables logistics operators to deliver goods more efficiently and with less environmental impact. A key focus is to explore how many car trips in the city centre can be replaced by active facilitation through mobility hotels and similar initiatives.

The city collaborates with several private stakeholders on this initiative, including Mobility Solutions AS, Posten/Bring, Wolt, and Nordic FM Group. The model encourages a commercial approach. For example, the national postal service can rent cargo bikes and access on-site services to facilitate green last-mile deliveries. More businesses are invited to join, allowing the city to test how such a facility fits Oslo's regulatory and spatial context.

Public support plays a vital role. Financial assistance helps small firms enter the market and develop viable delivery models, while the city benefits from reduced congestion, better use of public space, and progress towards its climate targets. Oslo's goal is to cut CO₂ emissions by 95 percent and traffic levels by 33 percent by 2030. Enabling logistics by bike is key to achieving this, particularly given space constraints and legal limits on stricter measures like zero-emission zones.

One major barrier to adoption is the maintenance burden of cargo bikes. The Kaia Mobility Hotel addresses this through on-site workshops and customised servicing. The hotel also helps logistics companies overcome concerns about predictability and flexibility, which often discourage a shift away from fossil fuel vehicles. For the city, this model helps optimise limited urban space and supports wider efforts like kerbside management pilots, extended delivery hours, and consolidation schemes.

Though Oslo does not yet have a formal Sustainable Urban Logistics Plan, the Mobility Hotel reflects the city's pragmatic and partnership-based approach to greener logistics. The experience offers important lessons on how cities can guide change without over-regulating, and how public-private collaboration can accelerate low-emission logistics in complex urban environments.

Munich's Paketposthalle: A New XXL Cycle Logistics Hub for Cargo and Delivery

Munich has launched a new municipal cycle logistics hub at the Paketposthalle, where initial trials of cargo bike deliveries are now underway. Covering 2,000 square metres, the site includes extensive storage space for parcels, pallets and refrigerated goods, alongside a bicycle service workshop, a rest area for riders, and a showroom. From here, different types of cargo bikes will distribute food, medicines, packages, and other items across the city.

This site is Munich's second publicly run logistics hub dedicated to cycle-based delivery and, once completed, is expected to become the largest of its kind in Germany. Until redevelopment of the wider Paketposthalle site begins, the current premises will be used as an interim base. The city's first hub, opened at Viehhof two years ago, has been in high demand, prompting the expansion to a second centre—ten times larger—developed in collaboration with private partners.

The initiative reflects the city's ambition to reduce congestion, emissions, and double-parking through more sustainable transport. Officials highlighted the benefits: cargo bikes move efficiently through dense traffic, occupy less space, and can stop with ease in restricted areas. According to Dunkel, each delivery by bike helps reduce traffic pressure, cut emissions, and often reach customers more quickly than vans.

The pilot phase has been active since June, with companies such as Dachser Food Logistics, GLS, Pacflix, and local operator B4B Logistics already involved. B4B also manages the on-site workshop and showroom, enabling businesses to test different vehicle models and access quick maintenance services. These facilities aim to make cargo bikes a realistic alternative to conventional vans, particularly for small businesses and service providers.

The benefits are tangible: cargo bikes offer cost savings, improved flexibility, and faster response times in urban areas, while significantly reducing environmental impact. In Germany, the cycle logistics sector generated €190 million in 2024, covering 8.5 million kilometres and avoiding 2,200 tonnes of CO₂. In Munich alone, the Viehhof hub handles around 260,000 deliveries per year, saving approximately 8,000 hours of on-street vehicle occupation—demonstrating the real potential of shifting last-mile logistics towards cargo bikes (metaCCAZE, 2025).

Existing supporting tools

- MOVE21 - Urban nodes Competence Center in hub. [Link](#)
- MOVE21 - Public Private Collaboration a Whitepaper. [Read more.](#)
- URBANE - [D3.2 – Modelling Framework and Agent-Based Models](#)
- Harmony - Tactical freight simulator with applications that simulate the use of micro-consolidation centres in De Bok et al. (2024) and under <https://harmony-h2020.eu/>

3.3.3 Support to fleet transition, cargo bike purchase or renting

As cities across Europe work to decarbonise urban logistics, a shift toward zero-emission delivery fleets—particularly e-vans and cargo bikes—is emerging as both an environmentally and economically viable solution. A study conducted by EIT InnoEnergy has demonstrated that integrating mixed electric vehicle fleets into last-mile logistics can significantly reduce operational costs for logistics providers, with average savings reaching €0.28 per parcel by 2023. Beyond cost-efficiency, the use of cargo bikes appears particularly promising, with leasing costs currently estimated at around 60% lower than those for electric vans. In environmental terms, the transition to electric and active modes of freight transport could have a profound impact. When van traffic is reduced by 15% to 58%, cities could achieve carbon dioxide (CO₂) emission reductions ranging from 62% to 81% compared to operations relying entirely on internal combustion engine vehicles. At a larger scale, this would allow the 100 largest cities in the European Union to collectively eliminate up to 120,000 delivery vans, potentially cutting last-mile CO₂ emissions by between 98 and 122 million kilograms annually—a reduction of 73% to 80% (EIT Inno Energy, 2024).

These findings underline the critical importance of fleet transition as a priority area for local authorities, especially when combined with the implementation of LEZs or ZEZs. Ensuring that logistics operators have the means and incentives to replace conventional vehicles is essential for the success of these regulatory measures. Moreover, the current tight labour market, and the potential shortage of e-vans drivers and riders, should be considered as these may impact the pace and feasibility of widespread fleet conversion.

Several cities have introduced complementary policies to support this transition. In Brussels, for instance, a dedicated LEZ premium is available for businesses affected by the zone's vehicle restrictions. Under specific conditions, financial assistance of up to €15,000 is offered to support the purchase or lease of a compliant commercial vehicle—either electric or petrol-powered—and can also contribute to the cost of installing a charging station (EGUM, 2024, p.14).

Elsewhere, cities such as Munich, Ljubljana, Grenoble and Maribor have launched pilot programmes aimed at promoting cargo bike use in urban deliveries. These schemes allow businesses to trial new delivery methods before making long-term investments. However, a recurring challenge is how to ensure continued uptake once the initial pilot phase ends. Policymakers are encouraged to provide not just short-term trials but also a clear pathway to sustained adoption, demonstrating medium- and long-term benefits—particularly from a financial perspective.

To maximise the effectiveness of fleet transition efforts, such programmes must be closely aligned with broader access and kerbside management strategies. This includes designating preferred loading areas, granting parking privileges for low-emission vehicles, and in some cases allowing access to dedicated infrastructure such as bus lanes. By integrating these complementary measures, cities can create more favourable operating conditions for cleaner logistics and facilitate a faster, more coordinated transition.

3.3.3.1 *Status of CodeZERO Pilot cities*

None of CodeZERO pilot cities has an ongoing financial support mechanism for fleet transition. Yet the administration support the transition through promotion and information provision.

3.3.3.2 *Case study and supporting tools*

Supporting the Uptake of Cargo Bikes in the Brussels Capital Region

The Brussels Capital Region has recognised transport as a major source of harmful air pollution, with 2018 figures showing that it accounted for 63% of nitrogen dioxide emissions, 34% of PM10, and 29% of PM2.5. In response, the Region has introduced a Low Emission Zone, planned a ban on diesel vehicles by 2030, supported clean public transport, expanded traffic-free areas, promoted cycling, and developed a sustainable freight strategy alongside its SUMP. The current SUMP, *Good Move*, emphasises the role of mobility choices in improving the quality of life in Brussels.

For many citizens and professionals, a car or van is still the preferred mode of transport, whether for carrying children, shopping, goods, or tools—journeys that are not always possible with a standard bicycle. The cargo bike offers a practical and low-emission alternative, reducing noise, congestion, and pollution. The CAIRGO BIKE initiative was therefore created to accelerate the shift towards clean air by addressing the overuse of large goods vehicles and cars for short urban trips, promoting a transition to cargo bikes. Research from the CycleLogistics project (2017) suggests that 50% of services and 75% of private trips could be undertaken using cargo bikes. While the cargo bike movement in Brussels is gaining momentum, it remains limited and vulnerable, requiring targeted support to grow.

The project's goal is to stimulate this trend in the short term and create the conditions for long-term consolidation. This is vital to engage economic actors and encourage both private users and professionals to commit to cargo bike use, making a measurable impact on air quality. The approach is user-focused and based on behavioural nudging, making the transition to cargo bikes easy and

appealing by removing barriers, improving access to information and equipment, and providing practical support.

The support system put in place includes wide-reaching communication campaigns to raise awareness and provide clear, inclusive information on all cargo bike-related activities in Brussels. Tailored coaching and testing opportunities have been made available for citizens, businesses, and public organisations to help them experience the benefits first-hand. Access to cargo bikes has been facilitated through sharing services, subsidies, and group purchasing schemes. Recognising that secure storage is one of the main obstacles to ownership, the Region has also developed off-street cargo bike parking solutions. The project incorporates ongoing evaluation, engaging directly with users to refine solutions, better address their needs, and measure the resulting impact on air quality.

Existing supporting tools

- CAIRGOBIKE project in the Brussels Capital Region. [Learn more.](#)
- CAIRGO BIKE FOR PROS - A conversion journey to cargo bikes for Brussels professionals- Lessons learned and recommendations. [Read more.](#)

3.4 Engaging with the ecosystem and citizens on urban logistics

If local authorities still lack the knowledge and comprehension of the dynamics at stake in urban logistics, dialogue and collaboration with the ecosystem are a good way to bridge that gap. The next sections outline which collaborations models exists and possible options for local authorities also to more actively engage with citizens in the topic of urban logistics.

3.4.1 Structured and long-lasting work with the ecosystem

Across all the plans, levers, and measures referenced in this report, collaboration and engagement with the logistics ecosystem are consistently identified as essential. This section outlines the various approaches to establishing such engagement and explores strategies for ensuring that these partnerships are durable over time.

Public-private collaboration can vary significantly in both form and function. As noted by George et al. (2024), these collaborations often depend on a foundation of trust, shared problem-solving, and mutual dependency. According to Smith et al. (2016), such partnerships typically emerge when mutual benefits are clearly identified—whether through resource optimisation, improved efficiency and service quality, or the creation of synergies. However, tensions can arise around differing objectives, transparency, accountability, risk allocation, and organisational cultures (MOVE21, 2024).

Projects can offer a practical and concrete framework for initiating collaboration with the logistics ecosystem and selected partners. They provide a defined context with allocated financial resources and timelines, along with clear measures and deliverables. The development and implementation of SULPs have also proven to be effective entry points for engagement.

Overall cities have activated various mechanisms to facilitate cooperation. One can distinguish four different set ups.

1. They are called **working groups** or **task forces** or **logistics fora**, often formed during the Sulp development process or during the implementation of a project, they are mostly led and

administratively supported by the local administration (urban planning agency, mobility department, or economic development department). Often those groups meet a couple of times a year. Representatives indicate that it is important to take time constraints into account when planning the meetings, planning them well in advance and outside working hours. There can be meeting fatigue especially once a clear objective the group works towards has been achieved. Sustaining their activity over time can be challenging.

2. **Structured collaborations led by third party**, the city of Antwerp supports through a project call the collaboration between companies and logistics operator in the bundling of their goods delivery. The agreement and the consultation of the companies is led by a third party which appears as a more neutral manager.
3. **Partnerships with local universities** are the third type of model, offering research support and facilitation as we mentioned earlier with Milan and the Polytechnic University of Milan, or the collaboration between the Vrije Universiteit Brussel (VUB) and the Brussels Capital Region. Those collaborations are often targeted towards developing intelligence on logistics flows, gathering data and setting up appropriate governance mechanisms to govern those. In Rome the municipality collaborates closely with University Roma 3 around the Urban Freight Lab. They engage together in projects (such as MOVE21) and lead the consultation work with the logistics ecosystem. In Gdynia (Poland) the city also works on a regular basis with researchers from the Gdansk University of Technology. One recent collaboration was around finding location for parcel lockers on public ground which would fit accessibility criteria and proposing them to logistics service operators.
4. **Zero-emission logistics deals or Green Deals** are structured collaborations that are bound to the achievement of concrete goals. Examples of those can be found in Belgium in the Brussels Capital Region, where private actors commit to concrete actions by signing a charter (Green Deal). In the Netherlands, deals formalise commitments to decarbonise freight operations through collaborative agreements and are supported across the different governance levels leading to strong coherence.

These tools and frameworks help cities to engage constructively with stakeholders, establish shared goals, and build long-term trust necessary for implementing sustainable urban logistics solutions.

3.4.1.1 Status of CodeZERO Pilot cities

Collaboration models in CodeZERO pilot city vary and are more or less structured and regular.

Antwerp	Oslo	Milan	Utrecht
CULT project third party collaboration model financed by city Working group for Sulp development	Ad hoc consultation and collaboration through EU funded projects;	Ad hoc consultation and collaboration through EU funded projects, regular collaboration with the University	Zero Emission logistics deal, formalised collaboration. Dedicated staff in the city administration 'brokers' are in daily dialogue with the private actors.

Table 6: Collaboration models in CodeZERO pilot cities

3.4.1.2 Good practice and supporting tools

Collaboration managed by a third party in the city of Antwerp

Seven leading companies — Danone, Delhaize, Jacobs Douwe Egberts, Pro-Duo, Proximus, Telenet, and Schoenen Torfs — have joined forces to make parcel deliveries to consumers and retailers greener, more efficient, and more socially responsible. Their collaboration is channelled through **CULT** (Collaborative Urban Logistics & Transport), an independent initiative designed to consolidate goods from multiple companies at warehouses on the outskirts of the city. From these hubs, deliveries are bundled, reducing the number of trips into urban areas and cutting congestion and emissions. The initiative's founder, Tri-Vizor, envisions an urban distribution system open to all market players and facilitated in partnership with city authorities. CULT's approach is encapsulated in its concept of a “**Green Deal Delivery**”: fixed delivery times, low-emission transport modes such as cargo bikes and electric vans, and couriers employed under fair working conditions.

This pilot is part of the urban logistics project call, launched in July 2020 and funded by the municipality “Smart Ways to Antwerp”, which seeks to promote innovative solutions for sustainable city logistics. The first bundled deliveries to Antwerp, using cargo bikes and electric vans have already been delivered. The long-term ambition is to expand this model to other cities.

For more information: www.cultcitylogistics.be.

Existing supporting tools

- Clean cities Report (2024)– Details four approaches to coordinate initiatives for zero-emission urban logistics. [Read more.](#)
- MOVE21(2025) – Guide on improving city's capacities for promoting sustainable mobility and logistics innovation. [Read more.](#)
- ULaaDs - The implementation of a multistakeholder approach in urban logistics. [Read more.](#)
- Interlud - Engagement game (in French) *LE JEU VIS MA LIVRAISON*. [Link.](#)
- [White Paper on Public-Private Partnerships](#) (2024), from the MOVE21 EU-funded project, highlighting how public-private collaboration and partnerships can promote sustainable and innovative urban mobility and logistics solutions.
- [Convenant ZECL](#) – Zero Emission City Logistics Rotterdam with an action programme and participating parties and [Logistiek010](#) as the community

3.4.2 Communicating and campaigning on the topic

Urban logistics remains a largely overlooked topic when it comes to direct communication and engagement with citizens. While cities are more accustomed to working with logistics service providers, and occasionally with retailers and shop owners, communication with the wider public on logistics issues is rare (Amaya et al. 2021).

Research on how citizens perceive urban freight is also limited. A notable exception is a case study referenced in scientific literature (Amaya et al. 2021), which challenges the assumption that citizens are unaware of logistics systems. The study found that citizens do, in fact, recognize the freight system and its impact on daily life. People who view local infrastructure as inadequate are also more attuned to the negative externalities caused by freight, such as noise and air pollution. Furthermore, awareness of these impacts is associated with a lower perception of the overall performance of urban logistics. Perceptions vary according to socio-economic background and place of residence, highlighting the

importance of context-sensitive engagement. These findings suggest that public awareness exists and that citizens should be more actively involved in planning processes. The large-scale online survey (10,092 respondents) done in the framework of CodeZERO which explores how online consumers across ten European countries make trade-offs between cost, convenience, and sustainability when selecting delivery and return options, also suggest that beyond price, consumers also value ethical and convenience-related attributes, showing moderate but consistent preferences for eco-friendly delivery options and home delivery. These findings confirm that consumers can become allies in the implementation for more sustainable delivery options.

However, city representatives interviewed expressed concerns about a double bind they face. On one hand, they perceive the need to foster greater public understanding of logistics requirements to build acceptance for the spatial demands of urban logistics. There are for example several reported cases of citizens' resistance on transforming parking spaces into spaces reserved to logistics operations, for instance in Gdynia and in Strasbourg. On the other hand, promoting more sustainable practices requires encouraging behavioural change among citizens by raising awareness of the negative impacts of unregulated logistics. This tension highlights the complexity of effectively communicating and engaging with the public on logistics-related issues.

Currently, communication about logistics with the public is minimal. No major open communication campaigns have been reported in European cities on this topic. Some cities such as the City of Liège in Belgium used social media to consult citizens on cycling and cargo bike usage – the impact of this kind of approaches is uncertain. The communicational capacity of local authorities is limited and, from a campaigning point of view, the question remains whether such communication efforts should better be led by the national level that has a broader broadcasting capacity (for instance through national TV or radio).

Nonetheless, independently of the final message sender, other policy sectors can inform such communication efforts. As logistics becomes more prominent in the sustainability agenda, lessons from climate communication efforts may be useful in shaping future approaches to inform and involve citizens.

Beyond communication, few cities have moved into the next stage of engagement: consultation. Some examples do exist. The City of Utrecht has conducted on-street consultations with citizens in relation to its ZEZ in the city centre. Similar experiences have been shared by representatives of the Metropolitan city of Strasbourg, where the implementation of the low emission zone and access regulation in the city centre led to active discussion with residents, shop owners etc.

This direct dialogue included residents, shoppers, and commuters. However, while citizens engagement is sometimes covered as a measure in SULPs – it is the case in Gothenburg for instance – interviews shows that in-depth engagement practices on the topic remain marginal and bound to either specific projects and pilots, or consultation around access regulation.

3.4.2.1 Status of CodeZERO Pilot cities

Prior to the project, the cities engaged in CodeZERO have done little engagement with citizens in the topic of logistics. Merely Utrecht indicated an indirect engagement on the topic through the implementation of the ZEZ. Yet through CodeZERO all four pilot cities took first steps towards advanced public engagement through the co-creation methodology. Two co-design workshops per pilot city took place during the first year of the project and a third one will follow in the course of the second project year. These first two workshops enabled citizens to share their views on the challenges they face and see around urban logistics and contribute sharpening the CodeZERO pilot measures.

3.4.2.2 Case study and existing supporting tools

Co-creation workshops in CodeZERO – A methodology to engage with all actors of the ecosystem

The co-creation process of CodeZERO is being organised around a series of three co-design workshops in Oslo, Utrecht, Antwerp, and Milan, involving consumers, retailers, transport operators, and local authorities. To prepare these workshops, Task 4.1 developed a co-design process to be replicated in the different cities documented in CodeZERO Deliverable 4.1.

The report starts by exploring the concept of co-design in the context of stakeholder engagement. It identifies co-design as one step of the co-creation process that is focused on solving a problem with a team of co-designers.

Four key principles are at the core of the co-design process: sharing power, prioritizing relationships, using participatory means, and building capability. These principles ensure the group of participants in the co-design exercise can follow a democratic process leading towards innovative and meaningful solutions. Despite its benefits, the application of co-design to propose solutions in last-mile urban freight transport is extremely limited. This deliverable, therefore, proposes a new approach to integrate stakeholders in the transition of the last mile.

Given that the focus of the co-design process is on solving a problem, the approach starts by developing the tools proposed by design-thinking. Among the different frameworks available, the Double Diamond was found to be used already in several co-design processes, especially within the health sector. The Double Diamond organises the process into four phases: discover (diverging), define (converging), develop (diverging), and deliver (converging). The two loops of divergent and convergent thinking are particularly useful for the participants to engage in deep reasoning while ensuring a generative design. CodeZERO further adapted the framework to make sure the principles of co-design are well integrated. The Double Diamond is thus preceded by an additional initial phase dedicated to building the right conditions for the team to co-design together.

[Link to the methodology.](#)

Existing supporting tools

- NetZeroCities – 8 communication tips for climate policies. [Read more.](#)

3.4.3 Stimulate employment and training

Engaging society in the evolving landscape of e-commerce and urban logistics extends beyond communication and consultation—it also involves stimulating fair job creation and supporting skills development.

Evidence from four national case studies—France, Germany, Italy, and Spain—from the European Trade Union Institute (Borelli et al. 2025) shows that while the e-commerce sector has expanded significantly, working conditions have at the same time worsened, leading to extremely high staff turnover. Far from being contradictory, these trends are closely linked. The sector's rapid growth is underpinned by intense price competition, fuelled by the imperative to deliver goods ever faster and at ever lower costs. The report published in June 2025, highlights that subcontracting has become the dominant business model in logistics, enabling companies to cut wages and reduce employment protections to maintain competitiveness and increase profits. Large logistics operators and e-commerce

giants are able to exert considerable control over smaller contractors, temporary work agencies, and even individual workers, often classified as self-employed. This widespread reliance on subcontracting effectively allows major firms to retain decision-making power and secure profits, while transferring financial risks and employment responsibilities onto less powerful actors in the supply chain.

Local policies might not be able to directly impact the regulations around those working conditions, yet there should be at least awareness of those trends when supporting this sector for instance through incentives and professional training, particularly in cycle logistics.

A recent initiative under the CICLE project—a transnational collaboration funded by the Erasmus+ programme of the European Union for the period 2023 to 2025—has examined the role of local authorities in supporting training programmes for bike couriers. The study highlighted the potential for cities to contribute meaningfully to the development of this emerging profession by facilitating access to training and promoting standards that support long-term professionalisation. Cycle logistics sits at the intersection of several key European policy priorities. It directly contributes to the European Pillar of Social Rights, especially its first chapter, which calls for equal opportunities and access to the labour market. Yet, the current structure of the sector remains insufficient to meet these ambitions. As a relatively new industry, cycle logistics lacks the institutional framework, recognition, and training infrastructure needed to ensure decent working conditions and equitable access to employment. Despite these challenges, the sector presents significant opportunities.

By promoting cleaner and more efficient last-mile delivery solutions, cycle logistics contributes to the objectives of the European Green Deal. Its adoption helps shift cities toward more sustainable mobility systems and aligns with the EU's zero-pollution ambition. Moreover, cycle logistics supports the effective implementation of SUMP and SULP, playing a complementary role in reshaping urban transport in a more sustainable and people-friendly direction. The sector also aligns with the priorities of the European Social Economy Action Plan, which calls for inclusive, sustainable economic models that generate both social and environmental benefits. Investing in training for bike couriers is one tangible way to realise this vision—strengthening workforce participation, offering new employment opportunities, and supporting the transition toward low-emission logistics.

In this context, the professionalisation of cycle logistics through structured, inclusive training frameworks stands out as a practical and impactful strategy. It enables local authorities to engage with broader societal goals while directly contributing to fairer, more resilient, and sustainable urban logistics systems across Europe.

3.4.3.1 Status of CodeZERO pilot cities

None of the pilot cities has reported to actively stimulate the market by subsidising or offering specific training for the logistics sector.

3.4.3.2 Good practices and existing supporting tools

BikeLogic & Sant Cugat del Vallès

In Spain, BikeLogic collaborated with the municipality to deliver a training program focused on sustainable urban logistics. The municipality supported the initiative by defining the budget and duration, while BikeLogic managed the training content and participant selection.

Urbike, Logisticity & Bruxelles Formation

In Brussels, Urbike partnered with Logisticity, a regional training centre, and Bruxelles Formation to provide training for unemployed individuals. The program includes technical, mechanical, and social modules, as well as visits to logistics operators. This training has notably required the formalisation of skills and their translation into training modules.

Fundraising to support social and cultural projects in Milan's neighbourhoods

In recent years, the Municipality of Milan has launched civic crowdfunding initiatives to support projects that strengthen the local economy and foster social, cultural, and urban regeneration initiatives in Milan's neighbourhoods. In 2021, So-De benefited from this program and, thanks to the funds raised through citizens' donations and the additional contribution from the Municipality (which more than doubled the community's donations), it was able to launch its activities, helping to sustain a sustainable and socially responsible last mile logistics business model which also entails trainings to riders.

Existing supporting tools

Analysis of bike couriers' training in Europe comprehensive & inclusive cycle logistics education program (CICLE) (2025). [Full document here.](#)

4 Conclusions

This first version of this toolset lays the foundation for a state-of-the-art overview of the policies and regulations that local authorities can draw upon – and are already applying – in the field of urban logistics. By highlighting the limits and challenges faced in implementing certain measures, it becomes clear that there is still a considerable way to go before truly sustainable urban logistics practices are achieved.

As a relatively new area of action for many local authorities, sustainable urban logistics, primarily the still growing e-commerce related movements, remains a complex issue that often lacks the necessary attention, dedicated measures, and political backing at the local level. Many cities have taken valuable first steps by launching small pilot initiatives, often supported by external funding. These pilots not only generate practical lessons but also help establish connections with the logistics ecosystem, which in turn can provide the basis for further collaborative policy development.

Cities with a well-defined strategy – for example, through the adoption of a Sulp – are in a stronger position. Such strategies create a shared understanding of the sector and its actors, enable open dialogue, set clear objectives that the market can prepare for, and foster coherence across different measures. Nevertheless, urban logistics touches upon different policy domains which sometimes leads to different, often conflicting, policy goals. Therefore, more alignment and coordination within municipalities is key. Integrating logistics as part of urban planning demands for a complex layering of tools, and each step towards integration requires adapting other planning instruments to take logistics into account.

Creating a context that fosters sustainable practices on social, economic, and environmental levels is challenging, particularly given that the economic dynamics underpinning the growth of e-commerce are global. Yet cities are the start and end points of these global value chains. There is still little understanding of the impacts that e-commerce has on liveability and local economic development. When the conversation turns to sustainability, it inevitably raises questions about the types of value chains and products being supported. Efforts to promote circular economies are, in many cases, in tension with the realities of globalised e-commerce, leaving cities to grapple with multiple contradictions. Finally, there is the question of communication with citizens and consumers. Public dialogue on logistics remains limited, and it is still unclear to what extent local authorities should take a more active role in raising awareness of sustainable consumption patterns. Greater alignment with national and European legislation will also be necessary to make meaningful progress.

Next to this version, CodeZERO will develop a final version of this Deliverable (D6.3) which will integrate the outcomes and lessons learned from the levers tested and implemented by the four pilot cities, placing particular emphasis on their potential for upscaling. This will also be informed both by the results of the replication programme and by feedback from the selected replicator cities.

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Annex A: Interview questions guide

1. Are transport planning documents being adapted for logistics needs?
2. Are land use planning documents being adapted for logistics needs?
3. Are regional/metropolitan planning documents being adapted for logistics needs?
4. Are new urban developments integrating space for logistics?
5. Are you monitoring urban sprawl related to urban logistics activities?
6. How is the influence of logistics on urban sprawl?
7. Are you monitoring the impact of e-commerce on local shops?
8. Have you observed changes in local retail due to e-commerce growth?
9. Do you Monitor the emission generated by urban logistics?
10. Has logistics space demand changed in the past 5 years?
11. What types of data are collected regarding e-commerce/logistics? (*check all that apply*)
12. Who collects this data?
13. Who owns this data?
14. Are there interoperability issues with collecting e-commerce/logistics data?
15. Are there collaborations with external stakeholders for data analysis (e.g. universities, start-ups)?
16. What access regulations exist for delivery/logistics vehicles?
17. Which urban logistics measure(s) do you have in place?
18. Is cycling infrastructure adapted for e-commerce deliveries (e.g. cargo bikes)?
19. Which are the key issues you observe related to urban logistics (Rank from lowest to highest)
20. Is your department involved in regulating or improving health and safety in the delivery sector?
21. Who does your city engage with on urban logistics?
22. Are logistics jobs addressed in urban or transport strategies?
23. Are logistics workers' working conditions or economic status part of your policy discussions?

Annex B: Agenda online stakeholder engagement workshop

Concept

CodeZERO is a project that aims to create sustainable, zero-emission last-mile delivery and return solutions for e-commerce. Our mission is to make these solutions attractive and viable for retailers, logistics service providers, consumers and local authorities.

The convenience of online shopping has created high expectations among consumers for fast, free, and flexible delivery options. CodeZERO is **innovating, testing and sharing** solutions to influence consumer behaviour to choose more sustainable delivery options, ensure e-commerce platforms provide the right information and finally, understand the contextual arrangements local authorities need to put in place to favour sustainable delivery models. This happens in four pilot sites [Antwerp](#), [Milan](#), [Oslo](#), and [Utrecht](#).

As Eurocities, our role is to develop a **toolset for and with local authorities** in two steps each marked by an online workshop.

On **19th June from 9h00 to 11h30** we are thus organising the first online workshop.

We want to better understand with you, which levers can you put in place at your level to support the development of sustainable delivery models.

Yet we want to **be specific** in our discussion and thus put the focus on following aspects:

Planning and regulation can be a key lever:

- Which shifts are useful in the existing planning tools/ regulations?
- How to ensure urban logistics are taken into account in early stages of planning new neighbourhoods?
- How to ensure a compatibility of 15min city and car free city concepts with sustainable delivery models?
- **Coordination** within the administration:
 - Where do we stand and what is the way forward in ensuring a greater coordinated action on the topic of logistics
 - Climate and social sustainability are at stake – which cross cutting collaboration can be envisaged with economic development department, social affairs etc.
- Which **engagement with consumers / citizens** can or should be ensured by local authorities. While stakeholder dialogues are emerging with the private sector – consumers are often left out of the picture: let us discuss reasons to further engage and communicate with citizens on their online consumption behaviour. We will explore if campaigning can be an option and hear from an expert on climate campaigns.

Agenda 19 June 2025

08.50 – 09.00	Joining online	
09.00 – 09.15	Welcome and introduction	Anne-Charlotte Trapp, Eurocities & Claudia de Stasio TRT
09.15 – 09.40	Critical challenges for local authorities related to e-commerce - Rank your agreement to statements - Which long terms goals do you pursue	Moderated by Anne-Charlotte Trapp, Eurocities
09.40 – 09.45	Transition	Anne-Charlotte Trapp, Eurocities
09.45 – 10.00	Presentation - Connection 15-min city concept and urban logistics policies	Catherine Gall Chaire Entrepreneuriat - Territoire - Innovation
10.00 – 10.30	Miro exercise	Moderated by Anne-Charlotte Trapp, Alyssa Harris, Eurocities and Delphine Pernot, TOI
10.30 – 10.35	Short break	
10.35 – 10.55	Presentation – Campaigning on urban logistics 7 tips	Alicia Puig Democratic Society
10.45 – 11.20	Miro exercise	Moderated by Anne-Charlotte Trapp, Alyssa Harris, Eurocities and Delphine Pernot, TOI
11.20 – 11.30	Concluding words	Anne-Charlotte Trapp, Eurocities

Annex C: Participating organisations and local authorities

- AMAT, Milan
- City of Antwerp
- City of Bremen
- City of Bruges
- City of Ghent
- City of London
- City of Oslo
- City of Rome
- City of Strasbourg
- City of Utrecht
- DEMSOC
- EIT Urban Mobility
- Eurocities
- Ministry of Hamburg
- TNO
- TOI
- TRT
- Université Paris Sorbonne
- University of the Aegean

Annex D: Survey Questions during the stakeholder engagement workshop

We have a lack of internal coordination on logistics

Strongly agree
 Agree
 Neutral
 Disagree
 Strongly Disagree

Rank the amount of people working on urban logistics in your local authority

0
 1
 1-5
 5-10

We have a lack of dedicated staff

Strongly agree
 Agree
 Neutral
 Disagree
 Strongly Disagree

We have a lack of data /understanding on urban logistics flows

Strongly agree
 Agree
 Neutral
 Disagree
 Strongly Disagree

We have a lack of data /understanding on urban logistics flows

Strongly agree
 Agree
 Neutral
 Disagree
 Strongly Disagree

We have a lack of understanding of economic development trends related to E-commerce

Strongly agree
 Agree
 Neutral
 Disagree
 Strongly Disagree

We have a lack of political interest and support on logistics policies

Strongly agree
 Agree
 Neutral
 Disagree
 Strongly Disagree

We have a lack of political vision on urban logistics

Strongly agree
 Agree
 Neutral
 Disagree
 Strongly Disagree

We have a SULP

Yes
 No
 In the making
 Urban logistics is incorporated in an other plan

We have a lack of planning instruments dedicated to logistics

Strongly agree
 Agree
 Neutral
 Disagree
 Strongly Disagree

Spaces dedicated to logistics are mandatory in each new area development , redevelopment project

Strongly agree
 Agree
 Neutral
 Disagree
 Strongly Disagree

We have a lack of space and urban logistics is not a prioritised activity

Strongly agree
 Agree
 Neutral
 Disagree
 Strongly Disagree

We have a zero net artificialisation of soils target

Yes
 No

We have mapped and or identified adapted spaces for last mile logistics hubs

Yes No In the making

We have mapped and or identified adapted spaces for lockers

Yes No In the making

We implement policies and measure for urban logitics in central urban areas

Strongly agree Agree Neutral Disagree Strongly Disagree

We implement policies and measures for urban logistics in the outskirts

Strongly agree Agree Neutral Disagree Strongly Disagree

We engage with e-commerce platforms

Strongly agree Agree Neutral Disagree Strongly Disagree

We engage with logistics service providers

Strongly agree Agree Neutral Disagree Strongly Disagree

We engage with citizens on the topic of urban logistics

Strongly agree Agree Neutral Disagree Strongly Disagree

We engage with delivery workers

Strongly agree Agree Neutral Disagree Strongly Disagree

We have an overview of existing urban logistics warehouse spaces

Strongly agree Agree Neutral Disagree Strongly Disagree

We have micro logistics hubs

Yes run by as Public private partnership Yes, run privately There are no micro-logistics hubs

We have smart delivery zones

No Yes In the planning

We have LEZ or ZEZ for logistics

No Yes In the planning

We have smart lockers

No Yes on public ground Yes on private ground Yes on private and public ground

We incentives sustainable deliveries

No Yes In the planning

We provide trainings to delivery workers

No Yes In the planning

We monitor the impact of e-commerce on the vitality of neighbourhoods