City Profiles and Analysis of Relevant EU Directives

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Change Log

Version	Description of change
V0.1	Initial version preparation
V1.0	Version reviewed by the project partners
V2.0	Version reviewed by the interviewees
V3.0	Version validated by the task leader and project leader

List of abbreviations

Abbreviation/Term	Description
ANPR	Automatic Number Plate Recognition
CA	Consortium Agreement
D	Deliverable
DOA	Description of Action
EC	European Commission
eFTI	electronic Freight Transport Information
EU	European Union
GA	Grant Agreement
GTU	GreenTUrn
LEZ	Low Emissions Zone
LSP	Logistics Service Provider
KPI	Key Performance Indicator
MS	Milestone
PC	Project Coordinator
PO	Project Officer
PSC	Project Steering Committee
SAB	Stakeholders Advisory Board
SULP	Sustainable Urban Logistics Plan
SUMP	Sustainable Urban Mobility Plan
UVAR	Urban Vehicle Access Regulations
WP	Work Package
WPL	Work Package Leader
ZEZ	Zero Emissions Zone

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Executive Summary

This deliverable presents a comprehensive analysis of city profiles and relevant EU directives, focusing on the complex landscape of e-commerce logistics across various European cities. The research, conducted by BAX and ALICE, highlights the challenges and opportunities in urban logistics, with a particular emphasis on sustainability and digitalization.

The first section of the deliverable provides an in-depth look at the logistics profiles of nine European cities, including Zaragoza, Poznań, Vienna, Athens, Lyon, Antwerp, Milan, Oslo, and Utrecht. The second section analyses relevant EU policies and directives that shape the regulatory landscape for e-commerce logistics. This analysis is structured around three key drivers: urban mobility, competitiveness, and circular economy.

Key findings include the ambitious plans of cities to reduce emissions and promote sustainable mobility, the challenges faced in data collection and stakeholder engagement, and the innovative solutions being implemented to address these challenges. The analysis of EU policies reveals a supportive framework for urban efforts, promoting sustainable urban mobility, digitalization, and integrated freight planning.

In conclusion, these deliverable notes that cities which are currently investing in data collection and analysis and stakeholder engagement, have a better understanding of the logistics landscape and have the potential to implement more innovative and impactful policies. National and regional authorities are urged to develop consistent guidelines and provide support for cities' efforts, aligning with the strategic objectives outlined in EU policies.

1. Introduction

This deliverable is the joint effort of two GreenTurn partners, BAX and ALICE, whose aim has been to understand the complex state of e-commerce logistics at different scales - local and European.

The first section aims to build a **landscape of city logistics profiles, with a focus on e-commerce,** based on the cities where GreenTurn pilots will be taking place. Bax and CodeZERO pilots coordinator, Eurocities, agreed to extend the scope of D6.3 to include CodeZERO cities. CodeZERO, GreenTurn's sister project, complements GreenTurn in both scope and geographical coverage. Extending the city profiles to include the other project's cities allowed for a broader understanding of urban logistics contexts across Europe.

The methodology allowed Bax to interview city practitioners and relevant stakeholders from each city, following a standard questionnaire. Although GreenTurn's focus is specifically on e-commerce, consumer behaviours, and the impacts on urban logistics, the interviews focused more on the general urban logistics landscape of the cities involved in the two projects. The reason for this is that knowledge of e-commerce and its impact on logistics and broader mobility remains limited. Most commonly, cities lack data, expertise, or time to analyse the impact of e-commerce on logistics. More generally, this deliverable underlines the challenges that public authorities are still facing in analysing and understanding urban logistics.

The outcome of the deliverable reconstructs the logistics landscape of the different cities, highlights best practices, challenges, and opportunities for cities to reach their ambitions for more sustainable logistics. Special attention is given to the topics of digitalisation and data.

Besides providing content for the deliverable, the information collected helped build an **initial knowledge base** for developing a toolkit, an expected output of both the GreenTurn and CodeZERO projects.

The second section, led by ALICE, **analyses the different policies, initiatives, regulations and directives at EU-level related to the goals of the GreenTurn project**. The chapter is structured around three key regulatory drivers that shape e-commerce sustainability: urban mobility, competitiveness, and circular economy. This chapter serves as reference on existing or upcoming policies showcasing the legislative landscape in which GreenTurn will evolve. The outcomes of the project will then feed recommendations and guidelines to build on these policies and regulations.

The document is structured as follows: Chapter 1 is the introduction, Chapter 2 is relative to the city profiles, and explains how interviews were conducted, the findings of the interviews, analysis and insights, and a focus on the toolkit that will be developed at a later stage along the project. Chapter 3 relates to the on the analysis of relevant EU policies. Chapter 4 reflects on these different issues and highlights the opportunities for greener e-commerce urban logistics.

2. City Profiles

2.1. Methodology

Bax contacted city practitioners working in the mobility, logistics or mobility policy departments of the different local authorities involved. For CodeZERO cities, Bax relied on the assistance of Eurocities for connecting with relevant stakeholders. In total, 9 cities were interviewed.

All cities except Athens were represented by city practitioners; for Athens, university experts participated in the interview.

Bax forwarded a standard questionnaire to GreenTurn and CodeZERO public authorities. The questionnaire was divided in **5 blocks**: Context and Policies, Logistics Landscape, Data Preparedness, GreenTurn and Next Steps (for CodeZERO: CodeZERO and Next Steps) and Digital Tools/ Toolkit. The exact structure of the questionnaire can be found in the **Annex**.

Cities had time to reflect on the questions, which were then discussed during a one-hour call with Bax (and Eurocities in the case of CodeZERO cities). Most interviews were conducted in English, except for Zaragoza and Lyon, where Spanish and French facilitated the dialogue. The information gathered through the completed questionnaires and interviews formed the basis for the deliverable and was further analysed to identify best practices, common challenges, and to complete the logistics landscape analysis.

Before the submission, the deliverable was checked by all the interviewees to validate the content chosen for the deliverable.

2.2. The cities engaged in this research

The deliverable is based on the interviews conducted with GreenTurn cities: Zaragoza, Poznań, Vienna, Athens and Lyon. Zaragoza and Poznań are partners in the GreenTurn project, while Vienna, Athens and Lyon are stakeholders where the GreenTurn pilots will take place, without having a project partner role.

Acknowledging potential synergies, the research went beyond the initial scope, by engaging with CodeZERO project and pilots coordinators (TRT and Eurocities). CodeZERO, GreenTurn's sister project, helped to extend the relevance of the city profiles. This involvement provided a more comprehensive landscape of e-commerce logistics contexts and fostered collaboration between the two projects.

Zaragoza

Zaragoza, the fourth most populated city in Spain, hosts over 680 thousand inhabitants and covers an area of 973.78 km^2, making it one of the most extensive cities in the country.

The city's economy has historically been driven by industry, which led to a significant population increase between the 1960s and 1980s. Although the population has stabilised since 2008, industry remains prominent in the surrounding areas. In addition to industry, Zaragoza's economy thrives on services and tourism, making it a dynamic hub of activity. Its strategic location makes Zaragoza a natural logistics hub not only for Spain but also for Western Europe, with several major European cities within a 1000-kilometre radius.

Zaragoza's urban growth followed a car-oriented sprawl model, with higher density in central neighbourhoods and significantly lower density in the outer ones. This sprawl often poses a barrier to sustainable logistics, as logistics service providers (LSPs) must cover larger distances to reach less densely populated areas, resulting in less efficient routes.

The city demonstrates a strong commitment to sustainable transportation, with modal shares of around 45% for walking, 3% for cycling, 23 % for public transport, and 27% for private vehicles. As one of the 100 climate-neutral cities, Zaragoza aims to reduce emissions by 80%, focusing particularly on mobility-related actions such as introducing clean buses. The city's proactive approach is evident in the implementation of a Low Emission Zone (LEZ), which started in September 2024. After a *six-month period*, the city started progressively enforcing the LEZ rules, and in the final phase, it will fine all the users whose vehicle does not comply with the low emissions regulations. Zaragoza is also dedicating resources to pedestrianising streets within the LEZ.

Through projects like Senator[1] and DISCO[2], the city is improving public space via loading and unloading bays and broader kerbside management. These spaces have the potential to accelerate the transition to sustainable logistics. For example, prioritising zero-emission vehicles for access to these spaces could encourage LSPs to adopt sustainable vehicles.

[1] Zaragoza in the Senator Project https://www.senatorproject.eu/living-labs/zaragoza/
[2] Zaragoza in the DISCO Project https://discoprojecteu.com/our-cities/

Additionally, a smart and integrated booking system for loading and unloading areas could reduce double parking and lead to smoother logistics operations. Currently, these areas are regulated only by signals and not systematically enforced, but their further development could help the city achieve its sustainable mobility ambitions.

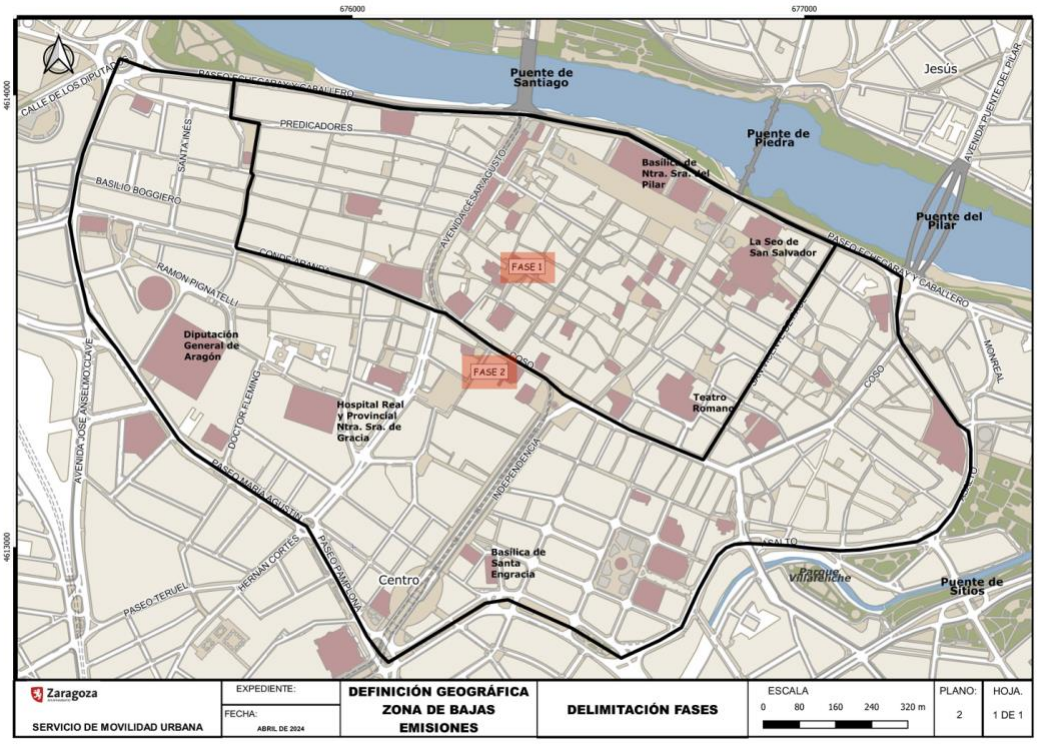

Figure 1: Implementation areas of the LEZ in Zaragoza (Zona de Bajas Emisiones[3])

Logistics Landscape, Navigating the Urban Flow

To understand the city's logistics, it is important to know that economic activity is characterised by a mix of industrial activities located on the outskirts, and citizen-oriented activities concentrated in the city centre, creating a dynamic interplay of logistics flows.

Relevant for the GreenTurn project is the city's central market. With the structure completely renovated in 2020, the market is now fully operational. It offers around 90 commercial spaces, which include traditional selling stalls but also cafes and restaurants. Given its size and the variety of goods sold, the market represents a very important attractor of logistics flows. Moreover, its central location requires calibrated decisions to ensure that both sustainability and competitiveness concerns are met.

The market can be seen as a logistics flow generator and e-commerce stakeholder. Certain shop owners offer the opportunity to deliver the goods to the rest of the city through a city-hosted online marketplace. The deliveries in the city centre are carried out on foot, while the deliveries in areas further away are conducted using electric vehicles, making the delivery a zero-emission operation.

[3] Municipality of Zaragoza https://www.zaragoza.es/sede/portal/movilidad/bajas-emisiones/mapa-fases

On another note, the city would benefit from collecting and analysing city-wide specific logistics data (such as origin-destinations, LSP trips and stops, sector-specific impact on logistics, etc.). Currently, the city does not have access to such data. However, Zaragoza is actively working to address this gap by participating in the SENATOR project. The project focuses on optimising urban logistics, and it includes a study to analyse the impacts of consolidation, pick-up and drop-off points and the smart management of loading (along with other topics). As a result of the studies and pilots, Zaragoza now utilises an app to assess the occupancy of certain loading and unloading bays and allows LSPs to book their spot. Moreover, the results of the pilots showed how the efficiency of logistical operations would increase if the city introduced pick-up and drop-off points.

Data Preparedness, Embracing the Digital Age

Zaragoza has established itself as a pioneer in open data, being one of the first cities in Spain to publish an open data portal (Datos Abiertos). The city's open data portal provides a wealth of information, including dedicated thematic maps, empowering citizens and stakeholders with valuable insights on mobility and beyond.

While Zaragoza has made significant strides in collecting and categorising relevant data, it faces the challenge of accessing data from third-party logistics providers and shared mobility services, as well as establishing the infrastructure to specifically monitor logistics flows (such as ANPR, monitored loading and unloading bays, etc.). Moreover, private companies are reluctant to share their data with public authorities, primarily due to concerns regarding competitiveness (the data could include strategic information such as routing) and privacy (for instance, personal details like names and addresses of recipients).

To tackle these data-related challenges, Zaragoza engages in the DISCO project. As a twinning living lab, the city aims to improve last-mile deliveries via a unified multi-stakeholder control tower. This initiative will involve collaboration among stakeholders and data sharing, facilitated by creating data spaces.

Digital Tools/ Toolkits, Harnessing Technology for Smarter Solutions

While Zaragoza has not yet utilised specific toolkits to address mobility and logistics challenges, the city recognises the potential of such tools to enhance planning and decision-making. The challenge of data collection and analysis presents an opportunity for Zaragoza to explore and implement toolkits that can streamline these processes and extract meaningful insights from the data.

By harnessing the power of technology, Zaragoza can further its efforts to optimise logistics, reduce emissions, and create a more sustainable and liveable urban environment.

Poznań

Poznań is home to 541,782 inhabitants and covers an area of 267.8 km^2. The city's economy is dominated by services (79.3%), followed by industry and construction (20.2%), with agriculture playing a minimal role (0.4%).

In 2019, the city conducted surveys to understand the use of different means of transport, concluding that cars played a major role in the mobility landscape, with a 37,3% share. Bicycle use is modest, with a share of 8,4%, walking is significative with a share of 20,6% while public transit accounts for 33,7%. To improve the share of sustainable modes, two of the priority areas of the city's SUMP are focused on (1) pedestrian and cycling traffic and (2) public transport.

Despite not having an official SULP, the project SULPiTER developed an initial policy document[4] to assist Poznan, along with other central Europe cities, to elaborate their SULP. The assumptions, guidelines and actions for city logistics created in this way were included as substantive material, developed on the basis of international cooperation, in one of the parts of the current SUMP (Area 5 – Road transport).

Remarkably, the city has ambitious plans for 2030, aiming to become a "multi-generational community of people living in green, friendly and well-connected neighbourhoods". Regarding mobility, the city's vision is to: reduce congestion in the city centre, reduce the share of emissions by cars, improve air quality, improve the share of public transport ridership and stimulate green city logistics.

It is important to consider that Poznań plays an important role in Poland's logistics, as it hosts large logistics centres and transhipment terminals.

A challenge Polish cities face regarding urban logistics regulation is the lack of regulatory pathways at the national level. Logistics primarily falls under the purview of municipalities. While the absence of specific guidelines at higher levels can be seen as a positive aspect, offering ambitious municipalities the freedom to take bolder actions in promoting sustainable urban logistics, it may also pose challenges for smaller or less structured municipalities. For these municipalities, the lack of guidelines can be a hindrance rather than a help. Given the energy and

[4] Interreg Central Europe, 2014-2020 https://programme2014-20.interreg-central.eu/Content.Node/SULPiTER/D.T3.2.5.SULP-POLICY-DOCUMENT-Poznan-FUA.pdf

expertise needed to craft logistics policies, they may simply choose not to engage in these processes, leaving the logistics landscape unchanged.

The lack of regulatory pathways also translates into a lack of institutional financial support for businesses that would like to purchase eLCVs. Therefore, the cost of the transition might exclude a large number of interested businesses that simply lack the financial capabilities.

However, financial support exists for entities wishing to invest in changes to their vehicle fleet. From 2021 to January 2025, entrepreneurs and other businesses were eligible for funding under the "Mój elektryk" (My EV) program to finance the purchase or lease of a zero-emission vehicle in categories M1, N1, L1 – L7e[5]. In May 2025, a zero-emission vehicle funding program for entrepreneurs, titled "Support for the purchase or leasing of zero-emission vehicles in categories N2 and N3[6]", was launched. The amount of funding varies depending on the type of vehicle and the method of acquisition (purchase or leasing), but the maximum funding can be up to 60% of eligible costs.

Logistics Landscape - Navigating the Urban Flow

The city has implemented several measures to manage freight transport, including weight-based traffic restrictions for trucks and the introduction of designated delivery envelopes aimed at regulating urban freight operations. The city has designated approximately 100 delivery envelopes, available for a subscription fee to local businesses, shops, restaurants, and more. Purchasing this service allows for a 15-minute stop for unloading/loading goods. Access to one or all of the envelopes can be purchased – the fees are PLN 150 (around 35€) and PLN 300 (around 70€), respectively. This allows for deliveries while also streamlining parking in urban spaces (it doesn't block sidewalks or bike paths).Despite this progress, Poznań still needs significant changes to better manage its urban logistics. For example, the city does not carry out systematic analyses of logistics flows and lacks methodologies and equipment to collect useful data.

The city also needs infrastructural improvements to encourage green logistics. Improving biking infrastructure, for example, could encourage cycling logistics. A more diffused charging network could stimulate the adoption of zero-emission vehicles.

Data Preparedness - Embracing the Digital Age

The city of Poznań is not new to data collection and open data publication. The Badam portal[7], as well as the Smart City Poznań Otwarte Dane, are two examples of portals used by the city for the publication and consultation of open data sets.

The city also collects mobility behaviour data on a 5-7 year basis.

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[5] Support for the purchase or lese of ZE N2 N3, National Fund for Environmental Protection and Water Management https://www.gov.pl/web/nfosigw/wsparcie-zakupu-lub-leasingu-pojazdow-zeroemisyjnych-kategorii-n2-i-n3

[6] EU Observatory for alternative fuels https://alternative-fuels-observatory.ec.europa.eu/general-information/news/poland-launches-major-funding-programs-zero-emission-transport

[7] Badam Portal https://badam.poznan.pl/sport-w-poznaniu-w-2024-r/

However, similarly to other cities interviewed, the city does not collect or request logistics-specific data. Currently, there is no physical infrastructure dedicated to monitoring urban logistics phenomena, nor a requirement by the city for logistics companies to share useful data. This data would be helpful to understand urban logistics phenomena better and pave the way for more sustainable logistics, for example, by more targeted policies or incentive schemes.

Digital Tools/ Toolkits - Harnessing Technology for Smarter Solutions

Poznań does not currently adopt any digital tool to tackle urban mobility and logistics challenges. For example, the strategy for deciding the location of the logistics envelopes distributed across the city centre was not supported by a digital tool. There is no system or platform in place to monitor logistics flows and assist decision makers in producing tailored policies. The city does, however, use traffic simulation tools for urban mobility concerns, such as transport planning: individual and public. The traffic model includes a breakdown into passenger cars, delivery vans, and trucks. Nonetheless, this doesn't include any information on logistics.

Vienna

Vienna is Austria's capital city, with a metropolitan population of 3 million. Despite Vienna's size, the city maintains a relatively high population density (around 4.5k inhabitants per square kilometre). It has a service-oriented economy, particularly in finance, banking, tourism, business services, IT, and is home to many startups.

From a logistics perspective, Vienna and its surrounding area acts as a key logistics hub in Austria and Central Europe. It features substantial transhipment centres, such as the train-to-truck facility in the southern terminal, the ship-to-truck & train-to-truck facility at the northern harbour along the Danube River, as well as the air-to-land hub of Vienna Airport. The number and size of these logistics facilities enhances the city's importance within the European logistics landscape.

When it comes to urban mobility and logistics, Vienna is characterised by a large modal split for sustainable modes, such as walking, cycling and public transport. Together, they account for 75% of the total split, with the car accounting for the remaining 25%[8].

A significant challenge related to mobility that the city faces is parking. Despite dedicating a large share of public space to on-street parking, it remains a scarce resource, leading to competition between private cars and logistics operations. The problem is exacerbated by the relatively affordable hourly rate for parking at 2.60€ but limited to 2 hours in total. This price might not discourage the use of private motorised transport by non-residents. The solution to this issue is far from obvious, especially when considering that the majority of buildings in the city centre are old and don't offer underground parking options, and that residents strongly oppose the possibility of reducing on-street parking for private vehicles.

Logistics Landscape - Navigating the Urban Flow

When it comes to urban logistics, Vienna takes a "dynamic" approach when planning loading zones. The city plans the location, size and hourly rate of those areas based on business demand and other factors, often helped by an internal dedicated tool.

[8] https://presse.wien.gv.at/presse/2025/03/16/modal-split-2024-weitere-zunahme-bei-oeffis-und-radfahren-zu-fuss-gehen-nach-wie-vor-auf-rekordniveau

In general, the city is active in experimenting with innovative logistics solutions, such as freight consolidation or construction material consolidation.

The initiative "Sustainable Logistics 2030+ Lower Austria-Vienna[9] is a collaborative partnership between the states of Lower Austria and the city of Vienna, as well as the chambers of commerce of both provinces. The goal is to further develop logistics in the region in a future-oriented, environmentally friendly, and efficient manner – with a clear strategic agenda, strong stakeholder involvement, and concrete pilot and rollout projects.

The first Logistics 2030+ Action Plan was published in October 2019 – with 35 measures in eight thematic clusters and over 130 defined actions. What's special about it: All measures are provided with a clear implementation roadmap (short, medium, and long term), supplemented by a monitoring system and the implementation of practical pilot projects. Following a positive interim assessment, it was decided in 2025 to continue the cooperation until 2030: During the 2025–2030 development period, the project partners will set clear thematic priorities within a strategic agenda, develop flexible action paths, and initiate cooperation projects together with stakeholders. Logistics 2030+ thrives on the active participation of stakeholders from logistics, trade, industry, administration, science, and society.

Data Preparedness - Embracing the Digital Age

Similarly to GreenTurn city partners, Vienna also lacks substantial logistics data. The public authority does not have a clear picture of the number and types of logistics vehicles driving in the city each day, but some estimates. On the other hand, the chamber of commerce has detailed data on businesses and their associated vehicles. VCÖ[10], an Austrian public-benefit organisation specialising in mobility and transport estimated the logistics flows in the city per category of businesses[11]. According to the organisation, around 13% of road traffic is related to logistics. Nonetheless, despite being insightful figures, they just provide a static picture, and the municipality lacks a system to monitor and verify the numbers.

Data privacy regulations actually prevent the adoption of ANPR systems to collect number plate data and provide dynamic figures. Moreover, LSPs have not yet shared data with the municipality, which would like to start the process of cooperating and obtaining clearer insights into the mobility and logistics phenomena.

Digital Tools/ Toolkits - Harnessing Technology for Smarter Solutions

Vienna is not new to digital tools in the management of mobility and public space. In fact, the public authority utilises a digital tool when planning the location and size of short-term parking spots.

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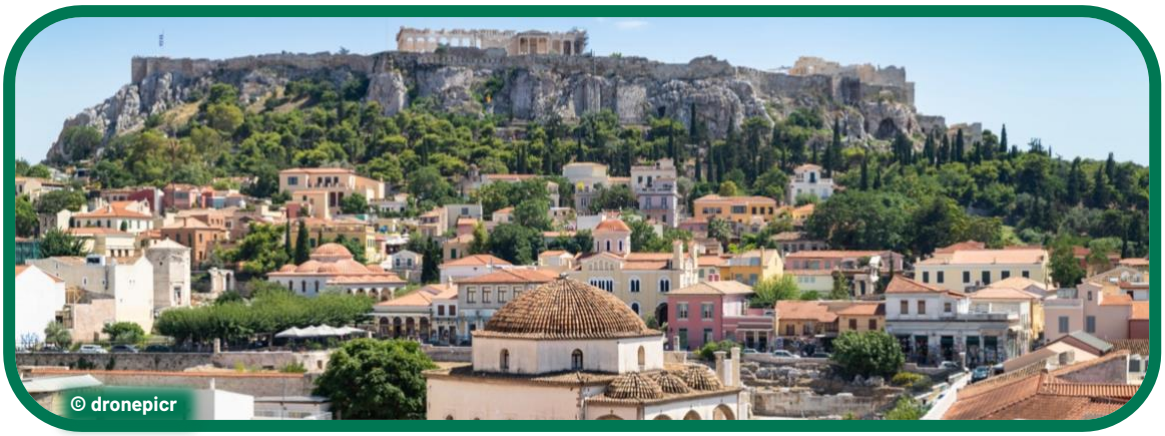
[9] Logistik 2030+ Lower Austria and Vienna, Action Plan: https://www.logistik2030.at/wp-content/uploads/2019/12/BROSCHUERE_Logistik2030_BarrFree.pdf
[10] https://vcoe.at/en
[11] VCÖ study https://vcoe.at/publikationen/vcoe-factsheets/detail/effiziente-city-logistik-zum-standard-machen

The municipality also adopts a digital tool to design loading zones for logistics. The system considers the required loading space based on business activity and location.

The city noted that not having real-time logistics data is a problem and suggested they would benefit from tools to collect and analyse such data. More details can be discussed with the city as the GreenTurn tool develops during the project.



Athens

At a first glance, Athens might appear a compact medium-sized to large city, with 640 thousand citizens living within 39 km^2. But the mobility and logistics of Athens must account for the city's functional urban area, home to 3.5 million people in more than 3000 km^2 of administrative boundaries. This extensive metropolitan area and the unique historical configuration of the city make mobility and logistics planning more challenging than in other, more modern cities in Europe.

Logistics Landscape - Navigating the Urban Flow

Due to the logistical needs of the two major economic sectors of the city, hospitality and retail, the Athens city centre is very dynamic. Moreover, being the capital of the Country and an important harbour city, Athens also hosts logistics hubs and distribution terminals that are relevant nationwide. This also means that the city not only experiences the pressure generated by its economic activities, but it is also subject to pressure from logistics activities that pass through its borders. The fervid logistics landscape that characterises Athens ultimately contributes to traffic and emissions in the city, complicating the pathway towards climate neutrality.

To address these challenges, the city promoted targeted policies balancing competitiveness and sustainability needs.

- Delivery Schedules: These vary by municipality and according to the characteristics of each vehicle. In December 2022, the Municipality of Athens prohibited deliveries by commercial vehicles/trucks over 2 tons from 09:00 to 21:00.
- Small Ring (Mikros Daktylios): In force since 1982, this regulation determines which vehicles are permitted to operate within a geographically defined area in the centre of Athens, based on the last digit of their license plate number. Additionally, in this area, commercial vehicles weighing over 2.2 tons are not allowed; lighter vehicles must comply with the same rules as other vehicles. After 2012, additional environmental criteria were introduced, barring commercial vehicles and buses that were first registered before January 1, 2000, from entering and operating within the Ring.
- Commercial Triangle: In the areas among the vertices of the Commercial Triangle (the central area of the Municipality of Athens enclosed by the road axes of Stadiou,

Mitropoleos, and Athinas streets, with the triangle's points at Syntagma, Monastiraki, and Omonia squares), heavier commercial vehicles are allowed to move along the narrow streets during hours when such movement is otherwise prohibited elsewhere.

- Blue Zone[12]: On specific roads in the centre of Athens, unrestricted circulation of all commercial vehicles is allowed between 14:30-17:00 and 19:00-07:00 (next day). During 07:00-11:00, only commercial vehicles with loads not exceeding 4 tons are permitted to circulate.

Although the regulations have been introduced, the city lacks the capacity to systematically enforce them. Therefore, Athens relies on punctual enforcement checks conducted by civil servants or police, but ensuring that the rules are respected across the entire city remains a challenge.

Alongside the lack of systematic enforcement, the transition towards more sustainable urban logistics is challenged by the lack of financial support to promote this transition. This entails, for example, that logistics service providers do not have access to targeted incentives for purchasing greener vehicles. While certain incentives are in place for private and certain categories of professionals (such as taxi drivers), LSPs do not benefit from significative financial support. This translates into a slow and minimal uptake of electric logistics vehicles, which account for a small share of the traffic. Moreover, another issue with the uptake of these vehicles is the charging infrastructure, which many deem insufficient.

Data Preparedness - Embracing the Digital Age

Like most other interviewed cities, Athens does not collect or elaborate data on urban logistics. The municipality lacks the methods to systematically monitor registration numbers driving through the city, for example, or the number of trips carried out by different LSPs. LSPs also are not obligated to share information on their trips, routes, returns or types of goods delivered with the city. As there is not a strategy to promote this exchange, LSPs do not share any type of data with the public authority.

Although certain figures on the type and number of logistics vehicles might exist at the national level, the city lacks the granularity to analyse and propose tailored approaches.

GreenTurn and Next Steps - Shaping a Sustainable Future

GreenTurn partner Logika, assisted by the University of the Aegean, will carry out B2B deliveries in selected neighbourhoods of the city. Through the GreenTurn pilot, Logika will experiment different nudging strategies to understand how customers value sustainability in logistics.

GreenTurn will contribute to widen the understanding of behavioural strategies on urban logistics and, more narrowly, on the sustainability of urban logistics and e-commerce practices. The pilot will be carried out with sustainable means of transport, setting a precedent of feasibility in a country that is often seen as infrastructurally unprepared for more sustainable logistics vehicles (lack of dedicated chargers, parking spots, tax and financial incentives, etc.).

[12] https://mitos.gov.gr/index.php/ΔΔ:Άδεια_Εισόδου_στην_Μπλε_Ζώνη

Digital Tools/ Toolkits - Harnessing Technology for Smarter Solutions

The city currently does not adopt a specific tool to address logistics challenges. In 2022, Attica region announced the deployment of an application for road users that would suggest them the less congested path to reach their destination. However, such application has yet not been released.

Lyon

Lyon is the third largest city in France, with a population of over 520 thousand inhabitants. Lyon Metropole includes 58 municipalities, including Villeurbanne, extends over 500 square kilometres and hosts more than 1.3M inhabitants.

The city structure sees several logistics zone located in the eastern part of the Lyon Metropole, where land availability and lower density allow large scale operations. The central urban areas, such as Lyon and Villeurbanne, attract instead a lot of logistics flows due to their high population and commercial densities.

Lyon Metropole has high ambition when it comes to sustainable urban mobility, as it aims to include both the decarbonisation of freight transport and better regulation of logistics within its territory. However, while in the past freight transport was not so visible in the streets, increase in e-commerce transport and changed needs of citizens, made logistics very evident in the area. Sometimes, logistics makes use of public space in an anarchic way. Loading groceries on a personal car is considered logistics and justifies the use of loading and unloading areas. Nonetheless, some individuals also use the loading/unloading areas simply to park for longer periods – an action incentivised by the lower fine of €35 compared to €60 for parking on a regular parking spot without paying. It is easy to imagine how the misuse of these areas, united to the increase of logistics traffic related to e-commerce, could have negative consequences on traffic, space use and liveability.

To reduce carbon emissions from logistics (as LCVs and HGVs are still responsible for nearly 50% of road NO_2 emissions, even though they account for only 25% of the distance travelled in the metropolitan area), a low emission zone covering the city of Lyon, Villeurbanne and a part of Ville de Caluire has been established. Lyon Metropole is also active in promoting the creation of a logistics observatory to improve knowledge and data collection for logistics.

These initiatives contribute to achieve more sustainable urban mobility and logistics, which is particularly important for the city Lyon as the city is also one of the 100 mission cities, promising to reduce carbon emissions to 0 by 2030.

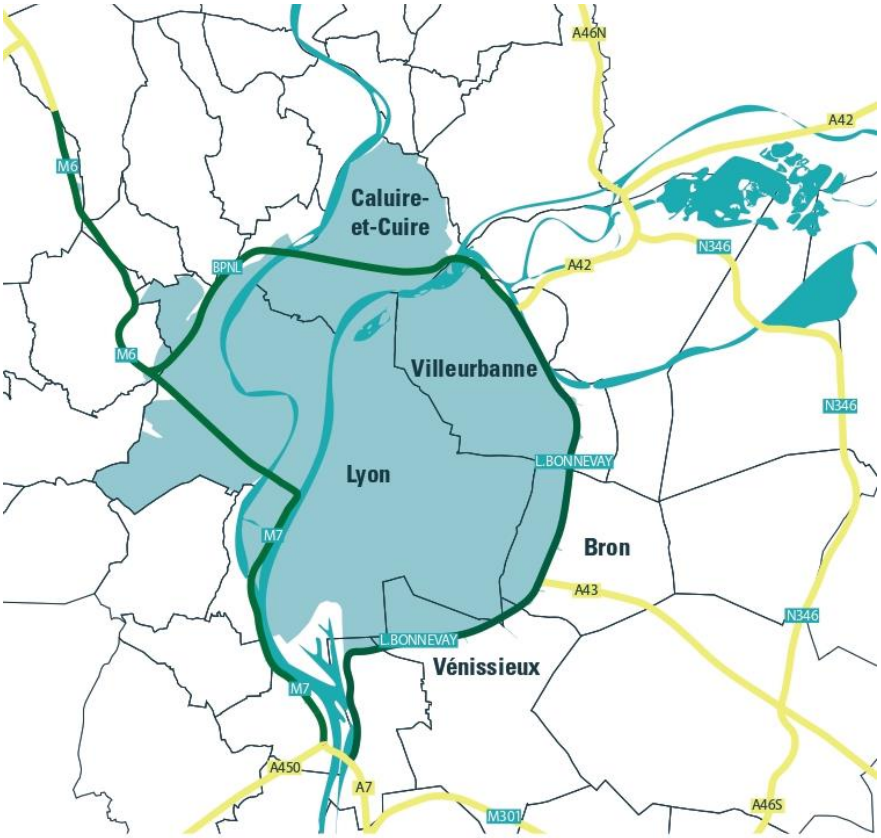


Figure 2: Lyon's LEZ (ZFE - Zone à Faibles Émissions)[13]

Logistics landscape, navigating the urban flow

To structure the city's goals in urban logistics, Lyon Metropole elaborated a Logistics Orientation Document[14] which can be compared to a SULP. The four main pillars of the plan are:

1. (Improving) the use of land for logistics. This includes the development of logistics hotels or spaces to enable modal shift from larger road vehicles to alternative vehicles, such as cargo bikes and river transport.
2. Developing multimodality. This will rely on river (improving the docks), rail and cycling, but also on supporting cycle logistics via specific programs, improving cycle routes and providing financial (or fiscal) benefits to cycle logistics companies.
3. Regulations and standardisation. This will include the establishment of a zero emission zone, harmonising regulation and delivery areas.
4. Raising awareness of logistics impacts. Leveraging consultation bodies, gamification for users, but also integrating logistics into projects planning from the start of a project.

Data preparedness, embracing the digital age

[13] Grand Lyon, Map of the ZFE https://zfe.grandlyon.com/zfe-grand-lyon/

[14] Lyon Metropole Logistics Orientation Document https://www.grandlyon.com/fileadmin/user_upload/media/pdf/deplacements/orientation-logistique-urbaine.pdf

Lyon Metropole has previously conducted a detailed survey to obtain an overview of the e-commerce trends taking place in the city. The study, conducted in partnership with LAET (Laboratoire d'Aménagement et d'Économie Des Transport - Transport Planning and Economics Laboratory) in 2018-2019 is based on interviews with 1500 households.

The study found that, at that time, a household in the Lyon metropolitan area made 14 online purchases per year on average, which means 8.2 million deliveries across the metropolis. This has consequences on urban logistics, as high volumes of online purchases correspond to more deliveries and more freight traffic. In 2019, it was estimated that e-commerce in France generated about 9M deliveries per week, with higher online shopping frequencies for rural and peri-urban areas.

Lyon Metropole estimated 200.000 deliveries per day across its territory, translating to:

- 18.000km travelled and 11.6 tons of CO2 generated daily by home deliveries
- 17.000km travelled and 10.9 tons of CO2 generated daily by out of home deliveries
- 6.650km travelled on foot, 875km travelled by bike, 1600km travelled by public transport and 27,100 km travelled by car each day for deliveries-related trips

However, although insightful, the study consisted of surveys. These surveys were not corroborated with other studies looking for data evidence of the phenomena, allowing for estimations and not for precise quantification of the phenomena. Moreover, the city highlighted how this methodology brings with itself high costs, making it difficult to repeat over time and, therefore, making the results obsolete after a few years.

On another note, the city doesn't have such clarity when it comes to the actual players in the field of logistics. In the city, logistics is a chain of subcontracting, making it difficult to identify singular dominant players.

Conversely, the city has a better grip on the numbers and types of commercial vehicles populating the road network. The Lyon Mobility Agency[15] and Lyon Metropole websites contain a reference to these numbers, and from July 2025 the logistics observatory will expand on the data with further details. In brief, 85.000 LVs are in use as of June 2025, 29% of which used for deliveries and picking up goods and the remaining 63% is split in agriculture, services, waste management, energy and manufacturing/construction.

Digital Tools/ Toolkits - Harnessing Technology for Smarter Solutions

Lyon does not use digital toolkits as such. Many digital tools are developed by private companies for productivity and profitability, which does not always match the orientations of the local authority. The city is more focused on regulatory and planning tools and prefers solutions that also support local commerce, rather than just technical solutions like parcel lockers, which are widely used in other countries but not favoured in Lyon. Lyon's policymakers recognize the importance of supporting local businesses, which play a vital role in fostering vibrant neighbourhood communities. To help preserve and strengthen local commerce, the city has

[15] Agence des Mobilites https://mobilites.grandlyon.com/espace-pros/logistique-urbaine

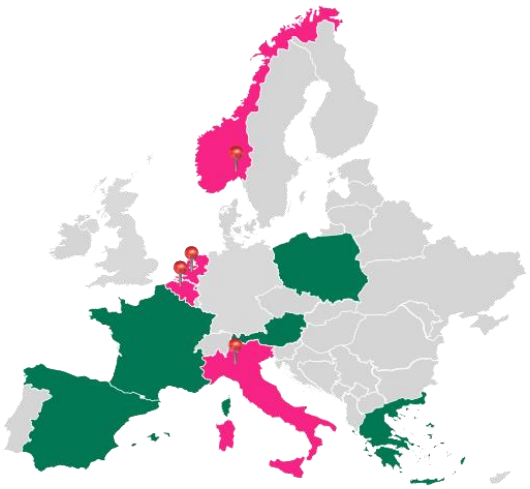
chosen not to install parcel lockers in public spaces, as these are often associated with the growth of e-commerce and could be seen as creating additional competition for local retailers. This approach reflects a commitment to maintaining the unique character and social fabric of Lyon's neighbourhoods.

A useful tool for the metropolis would be one that allows the collection and anonymization of professional data so public authorities can integrate it into regional planning. Tools for raising awareness among consumers about the impact of their online orders would also be important. For instance, informing users of the CO2 impact of fast delivery. However, the city itself is not legally competent to run such information campaigns; this would require broader legislative change.

2.3. CodeZERO Cities: Antwerp, Milan, Oslo and Utrecht

During the City Profile task, Bax connected with GreenTurn's sister project CodeZERO. Like GreenTurn, CodeZERO aims to foster a more sustainable urban logistics ecosystem by better understanding consumer behaviour and piloting innovative urban logistics solutions and communication strategies.

The two projects complement each other perfectly, both in terms of markets and geographical distribution across Europe.



This collaboration has expanded the understanding of logistics contexts across Europe, strengthening the diversity and relevance of the best practices collected. Both GreenTurn and CodeZERO involve public authorities committed to reach more sustainable urban logistics through research and innovation, and that are currently at the forefront of innovation when it comes to urban logistics.

Furthermore, the partnership established during this task paved the way for further collaborations. Some members of the CodeZERO consortium have joined GreenTurn's stakeholder advisory board. Moreover, Bax together with Eurocities, will remain in touch to learn from each other's approach while developing the digital tool. It is in fact important to ensure both the outputs will nicely complement each other making sure the outputs will be relevant for both parties.

Antwerp

Antwerp is the second largest city in Belgium, with an urban population of over 500 thousand people and a metropolitan population of more than 1.2 million. The city hosts one of the largest ports in Europe, the second busiest in the EU. In the heart of Belgium, halfway between Brussels and The Netherlands, the city is pivotal for European logistics. This great importance united to the commitment the city has towards more sustainable urban mobility and logistics lead to unique challenges that require innovative approaches. The city is part of the 100-climate neutral citie, and signed a climate contract to reach climate neutrality by 2030, stating with the neighbourhood of Linkeroever.

Logistics Landscape - Navigating the Urban Flow

The city has great ambitions when it comes to improving urban mobility and logistics ecosystems. Antwerp is committed to reduce traffic and congestion, promoting smoother flows. The objective comes with efforts in promoting a modal shift from cars to lighter and active modes, which combined to the commitment to improve road safety will help the city reduce overall emissions.

The ambitions and commitment originated from a series of challenges the city faces, especially congestion. Part of the issue of congestion is correlated to the choices of citizens, who often prefer to drive over cycling, walking or using public transport. In this context, urban logistics contributes too the mobility issues of the city, especially when considering the European-wide importance of the city and its port.

Nonetheless, the city is drafting a SULP plan that will outline how to address congestion and sustainable urban mobility through targeted interventions on logistics. Moreover, the establishment of zero emission zones will help the city better achieve its ambitious emissions targets. The left bank of the city is panned to be the first area of such kind by 2030, and the city is currently planning the details. At the Flemish region level, there is an agreement to further discuss and develop zero emission zones for urban logistics.

Data Preparedness - Embracing the Digital Age

Similarly to the GreenTurn interviewed cities, Antwerp currently doesn't own or collect logistics-specific data. The coordination among the different stakeholders to achieve this result is

challenging as, for example, private operators don't easily agree to share relevant data with the municipality.

Currently, the public authorities collects general mobility data, for example through cameras, but this isn't a comprehensive logistics-specific approach. To collect logistics data the municipality needs to consider privacy, technical and jurisdictional concerns.

In an ideal scenario, the city would know better understand logistics flows, more specifically popular destinations in logistics trips and their relative time. Besides informing policies, this would allow to optimise the infrastructure, such as choosing better where to locate mobility hubs, parcel lockers or plan for heavier freight transit.

Digital Tools/ Toolkits - Harnessing Technology for Smarter Solutions

The city has currently added a logistics module to the Smart ways through Antwerp route planner[16]. This module allows LSP operating with LCVs to plan their routes avoiding school streets or sharp turns, for example. The app has the potential to be further integrated in the Smart Ways Through Antwerp app, allowing the LSPs operating in the cities to run smarter and more sustainable logistics operations.

[16] Smart ways through Antwerp Logistics Route Planner https://www.slimnaarantwerpen.be/nl/routeplanner?mapMode=mobility&selectedMode=logistics&selectedToggles=freight-route-network,loading-area,truck-parkings,pedestrian-and-car-free-zones&selectedFilters=truck

Milan

Milan is Italy's second largest city. Located in the North of the country, it has an urban population of more than 1.3M people, and a metropolitan population of over 6M inhabitants. Its financial relevance, logistics facilities (several major airports and transhipment hubs) and location makes it an important logistics node at European level. The extensive road network united to high share of car use, make Milan rank in the top 100 most congested cities in the world according to TomTom[17]. Besides issues related directly to traffic, congestion contributes to worsening Milan's air quality. The region where Milan sits is among the most polluted regions in Europe, where polluting emission are way above the EU thresholds for many days each year[18].

However, the city is committed to become more sustainable. The effort was concretised when Milan signed its climate contract to become one the 100 mission cities, aiming to achieve neutrality by 2030.

At the top of Milan's priorities when it comes to urban mobility and logistics, there is a reduction of congestion caused by freight vehicles. Besides improving traffic flow, it would positively impact air quality and traffic safety, which another great ambition of the city.

Logistics Landscape - Navigating the Urban Flow

An approach the city took in the past years is enforcing stricter access regulations in the city. Milan enforces an inner congestion charge zone called "Area C", with access restrictions based on vehicle emission classes. Residents must also comply with these restrictions and are granted a limited number of free accesses per year. Logistics vehicles are subject to additional time-based restrictions (e.g., only electric vehicles are allowed between 8 a.m. and 10 a.m.). The outer skirt belongs to "Area B", which covers the remaining 70% of the city. In both area B and C the most polluting vehicles are not allowed. The exclusion is based on the EURO rating of the vehicles' engine, and in the coming years the ban will extend progressively to the most recent EURO ICEs (internal combustion engines). To regulate the access, the municipality deployed several ANPR (automatic number plate recognition) cameras across the city.

[17] https://www.tomtom.com/traffic-index/ranking/
[18] https://www.euronews.com/green/2024/03/30/po-valley-air-pollution-is-causing-serious-health-risks-for-more-than-16-million-italians

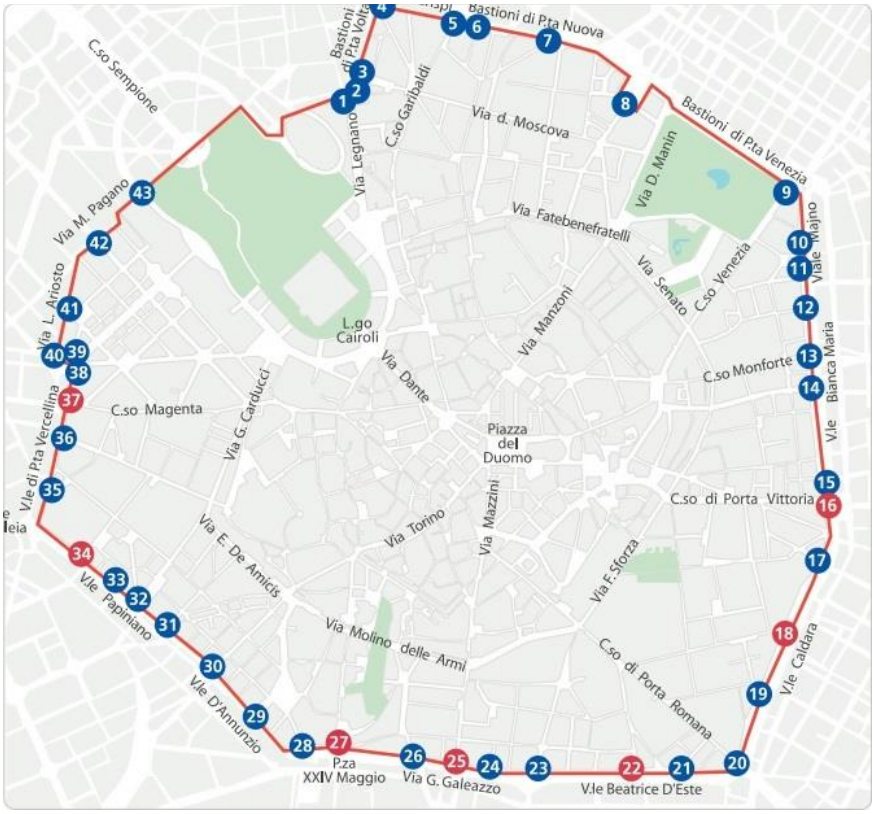


Figure 3: Map of "Zona C" and the ANPR cameras locations[19]

Moreover, the Metropolitan City of Milan (which is a different public authority than the Municipality of Milan) adopted a SULP in 2023 (PULS – Piano Urbano della Logistica Sostenibile), while the municipality is expected to define its own version in the coming years. The Metropolitan's SULP contains general descriptions of the logistics landscape in the area, as well as a series of recommendations aimed at reducing polluting emissions, promote innovative actions, foster collaboration in logistics and promote co-location of logistics facilities (as opposed to dedicate entire facilities only to logistics) and ultimately promote sustainability and innovation in logistics hubs. None of the recommendations provided in the SULP is legally binding, but represent a first step in the right direction for a more sustainable urban logistics ecosystem.

The ecommerce delivery landscape is dominated by large operators (such as Amazon), while small LSPs account for a fraction of these deliveries. In most cases deliveries are carried out using conventional commercial vehicles, although there are examples of companies adopting eLCVs or cargo bikes for their operations.

Data Preparedness - Embracing the Digital Age

Compared to other CodeZERO and GreenTurn city, Milan is the most advanced city when it comes to logistics data collection and analysis. AMAT, the Municipal agency in charge of territorial and mobility analysis, collaborate with Politecnico di Milano university to model some aspects of the logistics ecosystem in the city. The research, result of a C40 technical working group activity,

[19] Map of Zona C https://www.areacmilano.it/mappa#

showed that each day 60 thousand B2B deliveries and 150 thousands B2C deliveries are carried out.

Moreover, the city monitors the flows in the low emission zones with ANPR cameras. The city complements their data overview with TomTom traffic data, and surveys and interviews conducted by the universities of the city.

Nonetheless, the city still cannot reconstruct the logistics flows inside the city as it requires a dedicated monitoring infrastructure, or data sharing by the LSPs. LSPs and large e-commerce companies do not share any type of data with the municipality. Nonetheless, there are examples in mobility where the city asks data sharing agreements with mobility companies, as it is the case of micromobility operators.

A series of incentives, or guarantees on privacy concerns would prepare a better environment for future collaboration between private and public actors in data sharing.

Digital Tools/ Toolkits - Harnessing Technology for Smarter Solutions

The city is preparing its best practices toolkit through the technical working group. The toolkit would compile best practices in mobility and logistics at the national and international levels. Experts are still exploring which factors could be included in the toolkit, as well as the rationale behind the benchmarking of different solutions.

Oslo

Oslo is the capital city of Norway, with an urban population of over 700 thousands citizens and over 1.5 million when considering the metropolitan area.

The city's ambition is to reduce CO_2 emission by 95% by 2030, and aims to achieve it also by promoting greener mobility solutions and reducing traffic by 33%. Given the heavy presence of electric vehicles in the country, the city is particularly committed to expand its charging infrastructure to meet the needs of an ever-growing number of these vehicles, including larger freight vehicles. Norway is famous for being at the top of the list of the countries for share of electric cars. In 2024 almost all new cars sold in the country were electric[20].

To reach these ambitious objectives for climate neutrality, Oslo still needs to address multiple challenges related to mobility and logistics. In the first place, the lack of space and the tight competition between all the road users, from pedestrians to freight transport. Moreover, the industry has not yet been convinced by electric vehicles as much as private customers. Companies fear that adopting the technology on the large scale might impact the predictability of their operations, mostly due to the variability of the range of these vehicles. On top of the issues, until March 2025 Norwegian roads prohibit zero-emission zones, which limits the ability of the city to enforce stricter measure on mobility and logistics. Nonetheless, around the same time the Norwegian government started the conversation to allow cities to implement these measures in the future.

Logistics Landscape - Navigating the Urban Flow

The city of Oslo recognises the importance of logistics and its impact on a city's sustainability. The city centre and the logistics terminal in Alnabru are two important hotspots for logistics flows: the first for its lack of space and high demand for deliveries, the second for larger freight shipments and logistics traffic.

To create the conditions for a more sustainable urban logistics ecosystem, the city is pushing for a large-scale deployment of charging infrastructure. The city pays attention to the different

[20] Reuters, 2024 https://www.reuters.com/business/autos-transportation/norway-nearly-all-new-cars-sold-2024-were-fully-electric-2025-01-02/

needs of electric commercial vehicles and heavy-duty vehicles, aiming at guaranteeing an ecosystem capable of meeting their needs. To reduce the peak hours congestion, the city is piloting an extension in the delivery times. Another approach Oslo followed in recent years has been urban consolidation terminals, although financial viability remains a challenge. The city has now been experimenting with the concept of logistics hotels as a more financially viable solution and scale up in case the solution reveals successful.

A different approach taken by Oslo when incentivising sustainable deliveries is through their public procurement processes. In fact, all the services and deliveries to the municipality needs to be carried out using zero emission vehicles. In this way, the city sets the example and incentivises companies to transition to zero emission vehicles to be able to obtain a contract.

On the ecommerce and deliveries side, most of the operations are carried out by large companies, the size of Norwegian Post, DHL and DB Schenker. The small operators are often subcontracted by these larger companies. Given their small size, one would think that it would be easier to engage with these companies; however, the municipality is struggling to engage with them.

Data Preparedness - Embracing the Digital Age

Oslo does not directly collect logistics data. The ring road tolling systems allow to obtain an overview of the vehicles entering Oslo, but lacks the visibility on the movements inside. The city is now discussing with large companies how they could share their data to allow for a better picture of the internal movements; however, to achieve this objective, the benefits for both parties need to be highlighted.

The municipality would mostly use the data for improving the infrastructure. For example, by identifying loading and unloading hotspots the municipality could prepare better facilities or regulate parking for private cars. By identifying longer stops, the city could provide LSPs with charging locations and guarantee more reliable operations. Moreover, the city would be able to better locate spots for innovative solutions such as digital kerbside management or pick-up drop-off points.

Utrecht

Utrecht is one of the largest cities of the Netherlands with more than 370 thousand inhabitants in the urban area and more than 1.4 million in the metropolitan region of the city. The city expects a growth in population of up to 30% by 2040. Nonetheless, Utrecht has the ambition to maintain the current levels of traffic. This must be considered together with the commitment of the city to reach zero emissions by 2030, as Utrecht is one of the 100 mission cities.

Planning for zero emissions and for stable traffic while forecasting a population expansion is a challenge that requires innovative approaches, targeted policy actions, and the deployment of new solutions in mobility and logistics.

In this context, logistics needs to be carefully planned to avoid the increased number of residents remain underserved, while ensuring that logistics does not negatively impact traffic too much. However, the lack of national and international guidelines can lead to a slower and more burdensome introduction of more sustainable policies. This is because the city needs to develop many initiatives from scratch instead of relying on existing practices of proven efficacy. The experimental nature of this initiative often leads to small scale pilots with ineffective solutions, which in turn lead to failure and low support rates. Businesses are often resistant to changes in the logistics status quo, claiming that restricting access to the certain commercial areas (such as the city centre) hurts local economy.

Logistics Landscape - Navigating the Urban Flow

Utrecht aims to achieve what they call "zero impact logistics": a logistics ecosystem that does not impact the environment but also the liveability of the city (no noise, no space occupation and no emissions). The municipality is committed to encouraging, facilitating, regulating, and informing clean and efficient urban logistics. Utrecht has an implementation program for urban logistics with 15 measures to achieve this[21].

Utrecht is now increasingly focusing on regulating urban logistics by imposing new access regulations for logistics vehicles in the city centre, thereby accelerating the transition. This is

[21] Utrecht municipality, Logistics Implementation Plan 2023-2026: https://utrecht.bestuurlijkeinformatie.nl/Reports/Document/20718e1c-5108-4413-8ec1-a5e5d893b54e?documentId=a7a56319-7460-41f8-a376-4781efd979ed

because encouraging, informing, and facilitating urban logistics providers has not yielded sufficient results.

To this end, Since January 1st 2025, Utrecht and 16 other Dutch cities are implementing zero-emission zones[22]. Gradually, older vehicles will be banned from entering the city, starting with Euro 5 diesel vans in 2027 allowing just emissions free vehicles in 2029.

The city centre of Utrecht is fairly congested during peak hours. The zero emissions zone and stricter rules on logistics vehicles access aim at reducing congestion and increasing liveability in the area. The municipality allows loading and unloading vehicles (not yet included in the zero-emissions ban) between 6 AM and 11:30 AM. The rest of the day logistics vehicles for deliveries are not allowed, with the exception of electric or biogas vehicles < 3,5 tons, which can access until 12 PM, and between 7 and 9 PM (with the exception of Thursday evenings, when electric logistics vehicles < 3.5 ton are allowed between 9 and 11 PM).

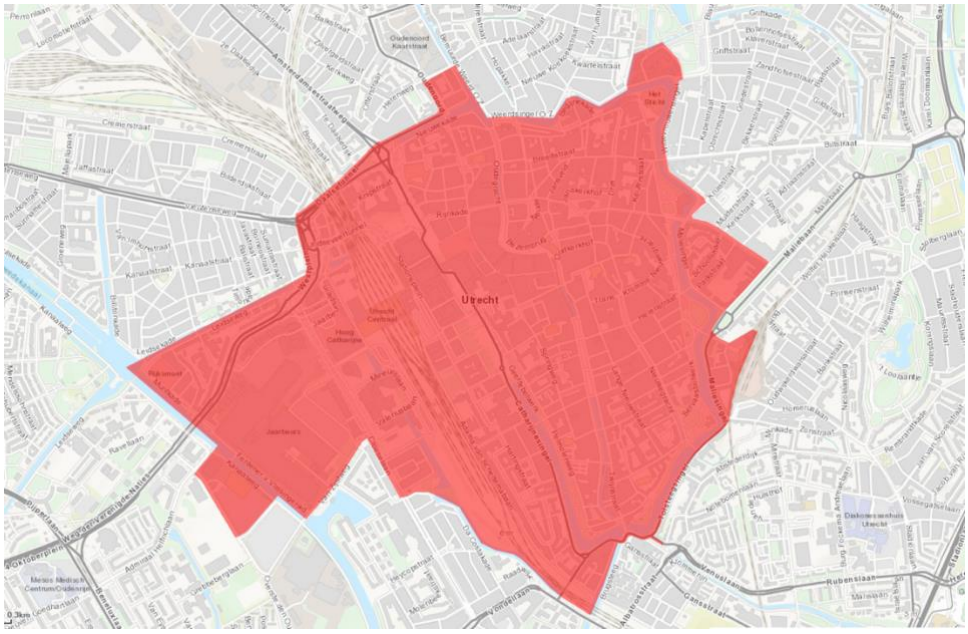


Figure 4: Map of the Zero Emissions Zone of Utrecht[23]

Besides these restrictive measures, Utrecht also adopts a series of incentives to rationalise urban logistics flows in the city.

An example is the exemption of vehicles which perform consolidation from the time restricted access to the city centre. LSP who perform consolidation can always obtain an exemption to access the city centre, also behind the official time window. Moreover, these vehicles can be allowed to use the less congested bus lanes. Consolidating goods allows for a more efficient use of vehicles. Consolidation is incentivised because it has the potential to lead to a more efficient

[22] Zero Emission Stadslogistiek https://www.opwegnaarzes.nl/bedrijven/waar-komen-de-ze-zones
[23] Gemeente Utrecht, Milieuzone https://www.utrecht.nl/wonen-en-leven/gezonde-leefomgeving/luchtkwaliteit/milieuzone-en-zero-emissiezone

use of the fleet (fuller vehicles compared to the case consolidation doesn't happen), which leads to lower environmental and liveability impacts.

Data Preparedness - Embracing the Digital Age

Utrecht currently collects and uses some logistics data. In the first place, the city parking cameras and sensors can track the loading zones use. The city has the capability of issuing fines when certain areas are accessed outside the allowed time windows, with the wrong vehicles or without a permission to do so. Moreover, licence plate data can be matched to company activity. This would allow the city to have a more quantitative overview of the type of logistics traffic in the city, although privacy regulations limit the use of this type of data. Moreover, the city itself does not have enough data to reconstruct the routes of LSP to clearly identify popular routes

Nonetheless, differently from other cities, Utrecht managed to engage in meaningful conversations with LSPs. They can access selectively shared some useful data that the city can then use to derive useful information, such as company-specific heatmaps. LSPs usually share this data when they can derive from benefit from this interaction.

Besides this data, the city would be interested to know precise delivery routes and stop locations, real-time visibility of logistics vehicles movements and sector-wide delivery patterns. The city would then use this more detailed data to produce more effective regulations (or incentives).

2.4. Lessons learned

All the cities interviewed have very ambitious plans for sustainable urban mobility and reducing emissions. However, logistics is not always addressed directly, and Sustainable Urban Logistics Plans (SULPs) have not been as widely adopted as Sustainable Urban Mobility Plans (SUMPs). This section highlights the cross-learning opportunities and common challenges faced by the cities.

Common Ambitions and Challenges

Ambitions:

- **Reduction of Emissions:** All cities aim to significantly reduce emissions, with many targeting climate neutrality by 2030.
- **Sustainable Mobility:** There is a strong focus on promoting sustainable modes of transport, such as walking, cycling, and public transport.
- **Improved Logistics:** Cities are looking to better regulate and manage logistics to reduce congestion and improve air quality.

Challenges:

- **Data Collection:** Most cities struggle with collecting comprehensive and accurate data on logistics flows and e-commerce activities.
- **Regulatory Frameworks:** There is a lack of national or regional guidelines for sustainable urban logistics, making it difficult for cities to implement effective policies.
- **Stakeholder Engagement:** Engaging with logistics service providers (LSPs) and other stakeholders to share data and collaborate on sustainable solutions is a common challenge.

Best Practices and Innovative Solutions

Data Collection and Analysis:

- **Lyon:** Lyon has conducted detailed surveys and is building a logistics observatory to improve data collection and analysis. This observatory will provide valuable insights into logistics flows and help the city make data-driven decisions.
- **Milan:** Milan has collaborated with local universities to model logistics ecosystems and collect data on B2B and B2C deliveries. This collaboration has provided a comprehensive overview of the city's logistics landscape.

Regulatory Measures:

- **Zaragoza:** Zaragoza has implemented a Low Emission Zone (LEZ) and is focusing on improving loading and unloading bays. The city is also participating in the SENATOR project to optimize urban logistics.

- **Athens:** Athens has introduced weight-based traffic restrictions for trucks and time-restricted access for logistics vehicles in the city centre. These measures aim to reduce congestion and emissions.

Innovative Logistics Solutions:

- **Vienna:** Vienna is experimenting with freight consolidation and construction material consolidation. The city also uses a digital tool to plan the location and size of short-term parking spots and loading zones.
- **Oslo:** Oslo is pushing for a large-scale deployment of charging infrastructure for electric commercial vehicles. The city is also piloting an extension in delivery times to reduce peak hours congestion.

Stakeholder Engagement:

- **Utrecht:** Utrecht has managed to engage in meaningful conversations with LSPs and can access selectively shared heat maps. This collaboration has helped the city build a more comprehensive view of logistics flows.
- **Poznań:** Poznań is planning to collaborate with the Łukasiewicz Institute of Technology to transfer knowledge and enhance its capacity to address urban logistics challenges.
- **Vienna:** The initiative "Sustainable Logistics 2030+ Lower Austria-Vienna" in its actual period from 2025-2030 invites all stakeholders to contribute to the strategic agenda and initiate cooperative projects within the thematic topics.

Lessons Learned

Importance of Data:

- Data is crucial for understanding logistics flows and making informed decisions. Cities that have invested in data collection and analysis, such as Lyon and Milan, are better equipped to implement effective policies. Knowing the most popular spots for ecommerce deliveries could help cities better design the infrastructure, like equipping the streets with adequate loading and unloading areas or parcel lockers. Moreover, knowing which types of vehicles are being used by different labour categories can help the cities better design access restrictions, financial benefits for upgrading the fleet or special rules for accessing the zero emissions zones.

Regulatory Frameworks:

- National or regional guidelines for sustainable urban logistics can provide a framework for cities to implement effective policies. The lack of such guidelines can slow progress, especially for smaller or less structured municipalities. As a best practice example, the Netherlands elaborated a comprehensive framework to manage the transition of zero-emission zones in the country[24]. This fostered dialogue among the cities that took part in

[24] Zero Emissions City Logistics https://www.opwegnaarzes.nl/bedrijven/waar-komen-de-ze-zones

the initiative, promoting a standardised process. This is beneficial for citizens and businesses, as the rules are harmonised across the country. At the same time, it is beneficial for cities, which can rely on a standardised pathway to reach a common objective. In this way, the responsibility of setting up a process is not entirely on the city, saving time and resources and ensuring a higher success rate for the action.

- Cities can gain significant advantages from sharing best practices and learning from each other's experiences. Collaborative projects such as GreenTurn and CodeZERO offer valuable opportunities for knowledge exchange and capacity building. The GLEAM project[25] serves as an excellent example of successful collaboration among cities within a larger project framework. For instance, Mechelen and Leuven worked together to develop strategies for engaging with small and medium-sized enterprises (SMEs) operating in both cities. Moreover, Rotterdam and Aarhus demonstrated cross-country collaboration by focusing on adapting current cycling infrastructure to accommodate cargo bike operations while ensuring safety for all users. Collaboration allows for the sharing of resources and responsibilities in defining the path towards more sustainable urban logistics, rather than each city taking on the risks alone.

Stakeholder Engagement:

- Engaging with LSPs and other stakeholders is essential for collecting data and implementing sustainable logistics solutions. Cities need to build trust and demonstrate the benefits of collaboration to encourage data sharing and cooperation. An example that doesn't come from the world of logistics, but from the world is mobility, is Antwerp and the way the city allows shared mobility operators. The operators need to share some data to be able to operate in the city, and in exchange the city gives them access to Smart Ways Through Antwerp.
- Public-private partnerships can play a crucial role in promoting sustainable urban logistics. Cities can work with private companies to develop innovative solutions and share best practices.

2.5. Data preparedness

Data can provide policymakers with a concrete foundation for developing targeted policy actions to enhance the sustainability of urban logistics. For instance, understanding the times and locations where logistics vehicles frequently stop can help cities better adapt their infrastructure, potentially improving the use of public space, traffic flows and accessibility. Moreover, better-designed policies would not only enhance liveability for citizens but also ensure a fairer management of the stakeholders involved in logistics. For example, knowing that smaller companies own older and more polluting vehicles could allow the city to issue specific incentives targeted at this group, helping these companies transition to greener and more sustainable vehicles while contributing to better air quality for citizens.

[25] Interreg NSR - Gleam project https://www.interregnorthsea.eu/gleam-nsr

Despite the vast amount of data generated in logistics (e.g., route planning, warehouse management, fleet management) and e-commerce (e.g., online purchases, delivery preferences), cities are often excluded from utilising this data. Although cities are generally aware of the potential benefits of data for improving policies and infrastructures, they often lack knowledge on where to find the data or how to approach public and private stakeholders to initiate conversations.

Cities are particularly interested in the following data:

- The most 'popular' logistics hotspots and delivery patterns, including where most logistics activities are concentrated, which vehicles visit these locations, their duration of stay, and their origins.
- The age and technologies of the logistics fleet accessing the city.
- The share of logistics vehicles by operation category (e.g., services, construction, postal services, groceries).

Access to all or part of this information would enable cities to better design their interventions, adapt infrastructure, and develop policy interventions to improve the city's sustainability objectives while considering the needs of the industry.

During the GreenTurn city profile interviews, it became evident that different cities are at various stages in collecting (or requesting) and processing data. For simplicity, the cities can be categorised into three groups:

- **First Group:** Cities that neither collect logistics data directly nor request data from third parties, such as other public or private stakeholders. These cities lack awareness of how to collect (or request) useful logistics data and do not design data-driven policy interventions. Examples include Poznań and Athens.
- **Second Group:** Cities with limited access to logistics data, either directly collected or shared by third parties. These cities might be capable of collecting certain data themselves, for example, through ANPR or monitored parking areas, or they might be in contact with third parties to obtain some of their data. There is significant potential for these cities to develop data-driven policies, but currently, the public authorities do not utilise the available data for this purpose. This could be due to a lack of resources, limited time or budget, or privacy concerns. Zaragoza is an example of a city in this category.
- **Third Group:** Cities that collect logistics data autonomously and request data from other public and private entities to build a comprehensive overview of the logistics landscape. Despite having a better overview, these cities cannot fully realise the potential of a data-driven approach as they still need other stakeholders, such as public and private entities, to share more data or to be able to collect more detailed information (though they may be limited by privacy regulations). Milan, which collaborated with a knowledge institution to build a better overview, and Utrecht are examples of cities in this category.

Most of the interviewed cities struggle to collect or analyse data autonomously and do not easily engage with third parties to request the missing data that could complete their overview. Nonetheless, interviewing the different cities allowed for the identification of strengths and weaknesses in data preparedness. As a result, GreenTurn has enabled the development of a set

of best practices that could inspire other cities to improve their preparedness and attempt to produce data-driven policies. It is worth mentioning that:

- Vienna uses geospatial data to decide the location and characteristics of loading and unloading zones by estimating the impact each labour category has on urban mobility.
- Milan joined forces with the local university, Politecnico di Milano, to collect data, identify relevant data sources, and analyse the information to produce detailed reports on e-commerce.
- Utrecht and Zaragoza enforce the zero-emission zone using ANPR, although they are not able to use the data to design targeted policies.

2.6. E-commerce

The interviewed public authorities don't have concrete figures on e-commerce and e-commerce behaviour. They are not aware of the share of vehicles operating in the e-commerce supply chain, kilometres driven in the city, types of vehicles, return rate, number of delivery stops or failed attempts.

While knowing all the information mention would not be necessarily useful for the public authorities, some information might expand the understanding of the city of certain phenomena and help with adapting the infrastructure. For example, if a company shared the locations where deliveries failed the most, the city could simplify the process for installing a white-label locker, provide users with another delivery option and save driven kilometres.

Milan conducted research together with Politecnico di Milano, in a follow up study that originated from a C40 assignment, could determine the share of goods that originated from e-commerce[26].

Anecdotally, most of the interviewed cities confirmed they perceived an increase in the volumes of ecommerce deliveries, although no one except for Milan, had exact figures.

Data relative to e-commerce can't be so easily retrieved as other urban logistics data. It requires crossing multiple data sources, as for example the data private customers forward through online platforms, LSP routing and delivery success data, etc. It is therefore too optimistic to think cities themselves could collect this data in autonomy. It is more realistic to imagine a scenario where cities asked for specific information to LSP or large e-commerce platforms to understand the trend better, or partner with research institution (such as Politecnico di Milano in Milan).

2.7. Input for the GreenTurn digital tool

One of GreenTurn's output will be a digital toolkit, aimed at aiding the cities in approaching urban logistics challenges. Some cities across Europe already use some sort of toolkit, and some of the city interviewed shared their experience.

[26] Zero Emission Urban Goods Transportation Programme, AMAT (2023) https://www.amat-mi.it/it/progetti/zero-emission-urban-goods-transportation-programme/

Using the information collected during the interview, which includes existing examples of toolkits used by the cities and what cities wish could do with hypothetical toolkits, this section synthesises the possible characteristics of the toolkit GreenTurn will produce.

A key request revolves around enhanced capabilities for **data collection, analysis, and management** for urban logistics. Cities seek tools to map delivery flows, identify hotspots, and gain insights into commercial flows. The ability to collect and anonymize professional data for integration into regional planning is also highly valued. This data-centric approach is seen as crucial for informed decision-making and overcoming existing data deficiencies in urban logistics.

Beyond data, cities are looking for tools that directly support **policy improvement and development**. This includes access to policy recommendations for various aspects like pricing schemes for loading and unloading areas, low traffic zones, zero emissions zones, commercial vehicle charging, and the strategic deployment of parcel lockers. There's a strong interest in understanding how to integrate freight considerations effectively into broader mobility plans. Furthermore, cities desire guidance on how to influence consumer behaviour towards more sustainable logistics choices.

For **technical and operational improvements**, cities would benefit from practical tools such as calculators for loading zones, solutions for optimizing parcel locker placement, and tools to improve route planning. Digital solutions that enhance the enforcement of existing logistics regulations are also sought after.

Finally, a recurring theme is the importance of **cross-learning and the sharing of best practices**. Cities are eager for access to case studies of successful initiatives, both national and international, along with clear implementation roadmaps for various logistics solutions like urban consolidation hubs. They seek insights into balancing the growth of e-commerce with sustainability goals and understanding different pilot approaches adopted by other urban areas. Overall, the emphasis is on practical, replicable tools that facilitate collaboration among local authorities, logistics service providers, and technology providers to streamline decision-making and policy implementation, ultimately contributing to more efficient and environmentally friendly last-mile delivery systems.

3. Analysis of Relevant EU policies

This chapter explores the alignment between EU-level policies and directives with the goals of the GreenTurn project – contributing to more sustainable e-commerce. The chapter is structured around three key regulatory drivers that shape e-commerce sustainability:

- Urban mobility – including low-emission zones for urban freight, urban space management and curb-side management and parking.
- Competitiveness – focusing on fair market conditions, and innovation incentives.
- Circular economy – encompassing policies on waste reduction, extended producer responsibility (EPR), and reuse and recycling targets.

3.1. Urban Mobility-related EU policies

2009, Action Plan on Urban Mobility[27]

The *Action Plan* outlined a roadmap for advancing sustainable urban mobility by introducing a series of practical short- and medium-term measures to be rolled out gradually until 2012. These measures aimed to tackle various urban mobility challenges in a coordinated and integrated manner. Through this Plan, the Commission proposed a voluntary partnership with local, regional, and national authorities, encouraging cooperation in areas of shared interest.

In addition, the Plan addressed demographic trends such as an ageing population and considered the mobility needs of vulnerable groups, including low-income communities (mobility poverty) and people with disabilities. It presented 20 actions grouped under six thematic areas, aiming to reshape urban transport systems to become more sustainable, inclusive, and efficient. The broader ambition was to enable all stakeholders across the EU, including industry, to help shape a future society focused on citizens' needs, quality of life, social harmony, and sustainability.

The six thematic areas identified in the Action Plan are:

- Theme 1 — Promoting integrated policies (Actions 1 – 3)
- Theme 2 — Focusing on citizens (Actions 4 – 9)
- Theme 3 — Greening urban transport (Actions 10 – 13)
- Theme 4 — Strengthening funding (Actions 14 – 15)
- Theme 5 — Sharing experience and knowledge (Actions16 – 18)
- Theme 6 — Optimising urban mobility (Actions 19 – 20)

[27] Action Plan on Urban Mobility

2010[28] and 2023[29], ITS Directive[30]

The *ITS Directive* serves as a key framework for the harmonized rollout of Intelligent Transport Systems (ITS) across Europe. Its main objective is to enable the development of interoperable and consistent ITS services throughout the EU. To achieve this, the European Commission introduced shared European specifications—covering functional, technical, organizational, and service-related aspects—to ensure that ITS solutions are compatible and work seamlessly across national borders.

Initial areas of focus included traffic and travel information services, the eCall emergency response system, and smart parking for trucks. These were later followed by real-time traffic updates and multimodal travel information services.

The Directive also requires Member States to facilitate access to and reuse of transport-related data, supporting the delivery of EU-wide interoperable ITS services to users. This data must be made available in machine-readable formats, as outlined in the Directive. However, Member States retain the flexibility to decide which ITS systems they choose to implement and fund.

2011 White Paper on Transport Policy[31]

The European Commission set out a roadmap with 40 specific actions for the next decade aimed at creating a more competitive and efficient transport system. The plan seeks to boost mobility, remove key obstacles, and support economic growth and jobs, while also aiming to reduce the EU's reliance on imported oil and lower transport-related carbon emissions by 60% by 2050.

By mid-century, the main targets include:

- Phasing out conventionally fuelled cars in cities
- Achieving 40% use of sustainable low-carbon fuels in aviation and a 40% reduction in shipping emissions
- Shifting 50% of medium-distance passenger and freight transport from road to rail or waterways

These goals are central to reaching the overall 60% cut in transport emissions.

2013 Urban Mobility Package[32]

The *2013 Urban Mobility Package* aimed to strengthen EU support for cities in addressing mobility challenges and to guide urban areas toward more sustainable development. It introduced, for the first time, the concept of Sustainable Urban Mobility Plans (SUMPs), which were widely welcomed by cities and led to the creation and revision of hundreds of urban mobility strategies. That same year, the first SUMP guidelines were published.

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[28] ITS Directive 2010
[29] ITS Directive 2023
[30] ITS Directive
[31] White paper 2011 on transport policy
[32] Urban mobility package 2013

The Package also highlighted the need for closer collaboration between public and private stakeholders to drive systemic improvements in urban transport. It placed special emphasis on urban logistics, acknowledging their vital role in city functioning and their growing impact on traffic and external costs. Despite their importance, logistics considerations are often overlooked in urban planning and management.

2020 Sustainable and Smart Mobility Strategy[33]

The *Sustainable and Smart Mobility Strategy* aims to accelerate the decarbonisation and modernisation of the European transport and mobility system, using the recovery from the COVID-19 crisis as an opportunity to limit environmental impact and improve citizens' health and safety. In line with the objectives of the European Green Deal, the strategy sets ambitious goals, such as having at least 30 million zero-emission vehicles on European roads and 100 climate-neutral cities by 2030, deploying automated mobility at scale, and ensuring that nearly all cars, vans, buses, and new heavy-duty vehicles are zero-emission by 2050. It also foresees a multimodal Trans-European Transport Network (TEN-T) equipped for sustainable and smart transport with high-speed connectivity. The strategy promotes a shift to more sustainable freight modes, the creation of low emission urban freight zones, and the enhancement of multimodal logistics. It further supports the digitalisation of transport logistics, the adoption of smart traffic management systems, and the development of alternative fuels infrastructure, including targeted actions to increase efficiency and reduce emissions from e-commerce deliveries.

2021 New EU Urban Mobility Framework[34]

The *New EU Urban Mobility Framework* is part of the European Green Deal and the Sustainable and Smart Mobility Strategy Action Plan, aiming to help European cities develop sustainable, safe, resilient, and zero-emission urban transport systems. Learning from the impacts of COVID-19, the framework also addresses social challenges and behavioural changes brought by the pandemic, including the growth of e-commerce and last-mile deliveries. It promotes the integration of passenger and freight transport in urban planning, traffic management, and policy-making, while giving equal importance to both. As part of the Package for Efficient and Green Mobility, it also contributes to the revision of the TEN-T Regulation and the ITS Directive, and proposes an action plan for long-distance and cross-border passenger rail. Key measures include the mandatory development of Sustainable Urban Mobility Plans (SUMPs) for cities over 100,000 inhabitants, improved urban-rural links through the TEN-T, support for zero- and low-emission zones, and the adoption of digital and smart mobility solutions. The framework underlines the key role of cities and regions in ensuring effective 'first and last mile' connections and supports better urban freight logistics, contributing to the EU's Fit for 55 targets while ensuring that cities remain liveable, accessible, and climate-resilient.

2013 TEN-T Regulation[35] & 2023 Revised TEN-T Regulation

[33] Sustainable and Smart Mobility Strategy
[34] New Urban Mobility Framework
[35] TEN-T

The 2023 revision of the TEN-T Regulation aims to create a comprehensive, EU-wide multimodal transport network that integrates rail, inland waterways, short sea shipping, and roads with key urban hubs, ports, airports, and terminals.

To align with the goals of the European Green Deal and the Sustainable and Smart Mobility Strategy, the European Commission updated the 2013 Regulation to accelerate the shift toward cleaner, smarter, and more sustainable mobility. The new regulation sets the transport sector on a path to reduce emissions by 90% and enhances connectivity, system resilience, and the uptake of greener transport modes.

A major urban mobility milestone of the revised regulation is the requirement for all 430 major cities on the TEN-T network to develop Sustainable Urban Mobility Plans (SUMPs) aimed at supporting zero- and low-emission mobility.

2022 EU missions – 100 climate-neutral and smart cities [36]

Launched in 2022, the EU Mission on 100 climate-neutral and smart cities is part of a broader initiative to tackle major societal challenges with concrete solutions. EU Missions set bold targets and aim to achieve measurable outcomes by 2030.

These Missions seek to generate impact by rethinking the role of research and innovation, promoting new governance models, fostering collaboration, and actively involving citizens. They are a key feature of the Horizon Europe research and innovation programme for 2021–2027.

2024, European Declaration on Cycling[37]

The Declaration recognizes that sustainable transport is crucial to meeting the EU's climate, zero pollution, and energy efficiency goals. Among these modes, cycling stands out as one of the most sustainable, healthy, and efficient options, with strong potential to support the decarbonisation of urban transport and contribute to the EU target of reducing greenhouse gas emissions by at least 55% by 2030 and achieving climate neutrality by 2050.

Cycling plays a particularly important role in European cities, including in urban logistics—such as parcel deliveries and shopping—through the use of cargo bikes and similar solutions. To fully harness its potential, cycling policies should acknowledge and support this diversity of uses.

3.2. Competitiveness-related EU policies

2019, European Green Deal[38]

The *European Green Deal* aims for climate neutrality by 2050, while reducing transport emissions by 90%. It directly impacts e-commerce logistics by promoting zero-emission transport solutions.

[36] EU Emissions – 100 climate-neutral and smart cities
[37] European declaration on cycling
[38] European Green Deal

2021, The New European Bauhaus[39]

The *New European Bauhaus*, complements the European Green Deal, focusing on quality of life, and citizen engagement in the making of more sustainable and liveable neighbourhoods. This sets an interesting framework for GreenTurn, which aims at making overall e-commerce deliveries more sustainable and efficient, while involving consumers-citizens.

The New European Bauhaus (NEB) initiative is actively exploring the "superblock" concept, particularly in the context of urban planning and sustainable living. Superblocks, as exemplified by the Barcelona model, are urban design strategies that prioritize pedestrian and cyclist movement while reducing car traffic within a defined area. The NEB initiative integrates this concept with its core values of sustainability, aesthetics, and inclusion, aiming to create more liveable, enjoyable, and environmentally friendly urban spaces.

This approach resonates with the objectives of the GreenTurn project, which aims to help transform the way citizens e-consume in a more sustainable way. By promoting greener consumption habits, GreenTurn supports urban models such as the "superblock" and the "15-minute city," contributing to the development of more liveable and enjoyable urban environments.

2023, Revision of the Driving Licence Directive[40]

The revised Driving Licence Directive introduces several updates related to driver training and road safety. One of the key changes allows holders of a category B licence to drive vehicles weighing up to 4,250 kg, provided the vehicle is alternatively powered—an increase from the current 3,500 kg limit.

This adjustment is primarily aimed at supporting the shift to electric vehicles, which tend to be heavier due to their batteries. It is especially relevant for promoting the use of electric vans in urban logistics, helping to boost their adoption in city transport and delivery operations.

2023 Green Deal Industrial Plan[41]

The *Green Deal Industrial Plan* introduced in 2023 is a **targeted, sector-specific response** within the broader Green Deal framework, focusing on **Europe's industrial capacity** in the context of the green transition. It was launched in response to growing geopolitical challenges, the energy crisis, and global competition in clean technologies — particularly after the adoption of the U.S. Inflation Reduction Act.

Both the **European Green Deal** and the **Green Deal Industrial Plan** influence the development of e-commerce, particularly through their focus on sustainable urban logistics, clean mobility, and digitalization.

- The European Green Deal addresses the environmental impact of e-commerce by promoting zero-emission delivery solutions, smart urban logistics, and sustainable transport systems. It supports policies that reduce emissions from last-mile deliveries,

[39] New European Bauhaus
[40] Revision of the driving licence directive
[41] Green Deal Industrial Plan

such as low- and zero-emission zones, urban freight planning, and digital traffic management.

- The Green Deal Industrial Plan reinforces these objectives by supporting the production and deployment of clean technologies essential for sustainable e-commerce logistics — like electric delivery vehicles, charging infrastructure, and digital logistics platforms. It also encourages innovation and investment in green and digital supply chains, ensuring that Europe can meet the growing demand for e-commerce in a climate-neutral way.

2023, CountEmissions EU[42]

Initiative by the **European Commission** aimed at establishing a unified methodology for calculating and reporting greenhouse gas (GHG) emissions from both freight and passenger transport services within the European Union. This framework seeks to ensure that GHG emissions data provided by transport services are reliable and accurate, allowing for fair comparisons and informed decision-making by consumers and businesses.

While this regulation does not specifically target **urban logistics or e-commerce**, its scope covers all transport modes and services, including those used for last-mile deliveries and online shopping distribution.

CountEmissions EU is not yet adopted. Transport and environment MEPs decision to enter into interinstitutional negotiations paves the way for Parliament and Council negotiators to agree on negotiations schedule.

2024, Draghi report on EU competitiveness[43]

The Draghi report on EU competitiveness, commissioned by President von der Leyen and published in July 2024, outlines a comprehensive strategy to strengthen Europe's economic growth and industrial leadership amid technological transformation, the green transition, and rising geopolitical tensions. The report highlights the EU's growing investment gap compared to other advanced economies and calls for coordinated action to boost productivity, improve the business environment, accelerate innovation, complete the Capital Markets Union, and reform the EU's institutional framework—aiming to achieve open strategic autonomy and ensure long-term prosperity.

2025, Industrial Action Plan for the European automotive sector[44]

The *Industrial Action Plan for the European Automotive Sector*, presented by the European Commission in March 2025, sets out a roadmap to support the industry's transformation amid challenges such as the shift to clean mobility, digitalisation, and increasing global competition. The plan outlines concrete measures across five key areas: innovation and digitalisation (including connected and autonomous vehicles), clean mobility (with a focus on zero-emission vehicles and charging infrastructure), supply chain resilience and competitiveness (notably in

[42] CountEmissions EU
[43] The Draghi report on EU competitiveness
[44] Industrial Action Plan for the European automotive sector

battery production), skills and social transition for workers, and a fairer regulatory and trade environment. Its goal is to safeguard Europe's industrial base and maintain the global leadership of its automotive sector.

Sustainable e-commerce is a key driver to facilitate transition to zero emission vehicles.

2025 eFTI Regulation Implementation[45]

As of January 2025, the first eFTI implementing and delegated acts have entered into force, allowing EU Member States to begin developing IT systems that will support digital freight documentation. By July 2027, all Member States will be required to accept electronic transport data via eFTI-certified platforms, marking a significant milestone in EU logistics and supply chain digitalisation.

eFTI (European Freight Transport Information) is a European initiative aimed at modernizing and harmonizing the exchange of information in the freight transport sector. Specifically, it is based on Regulation (EU) 2020/1056, adopted in 2020, which establishes a framework for the digital exchange of freight transport information within the European Union. The eFTI Regulation establishes a harmonized framework for the electronic exchange of freight transport information. By replacing paper-based documentation with standardized electronic data, the Regulation supports the EU's digital transformation goals, enhances operational efficiency, and facilitates compliance with EU and national freight regulations.

eFTI is B2A (business to administration) only. Authorities in all EU Member States will be obligated to accept electronic data shared by businesses through eFTI-certified platforms. It is used for processes such as CMR ("Convention on the Contract for the International Carriage of Goods by Road"), customs, regulatory checks of goods, etc. Although, it does have the potential to improve information exchange between businesses, making logistics processes more efficient. Businesses should start preparing for eFTI adoption and integrate certified digital freight platforms into their operations and take full advantage of platform functionalities that could be leveraged for other Business to Business data exchange processes.

3.3. Circular economy-related EU policies

The **Consumer Rights Directive (EU 2011/83)**[46] and the **Green Claims Directive**[47] (Proposal 2023 – now under discussion as the European Commission announced its intention to withdraw the legislative proposal) encourage transparent sustainability information for consumers. It gives consumers the same strong rights across the EU. It aligns and harmonises national consumer rules, for example on the information consumers need to be given before they purchase goods, services or digital content, and on their right to cancel online purchases, wherever they shop in the EU. These directives promote transparency in product sustainability information, which influences consumers' purchasing decisions in e-commerce. By being better informed,

[45] The eFTI Regulation - European Commission

[46] Consumer Rights Directive (EU 2011/83)

[47] Green Claims Directive

consumers can opt for products with lower environmental impacts and select more sustainable delivery and return options.

2016, General Data Protection Regulation (GDPR) (Regulation (EU) 2016/679) [48]

The *EU General Data Protection Regulation (GDPR)*, adopted in 2016 and applicable since 25 May 2018, is the world's most comprehensive privacy and data protection law. It modernises and replaces the 1995 Data Protection Directive, setting out individuals' fundamental rights in the digital age. The GDPR defines clear rules and obligations for organisations that process personal data, including principles of transparency, accountability, and data minimisation. It also establishes mechanisms for enforcement and significant penalties for non-compliance, ensuring that personal data is handled securely and lawfully across the EU.

2020, Circular Economy Action Plan[49] & Circular Economy Monitoring Framework[50]

The *EU Circular Economy Action Plan (CEAP)*, adopted in March 2020 as part of the European Green Deal, sets out a comprehensive strategy to transition the EU towards a circular, resource-efficient economy. It aims to reduce pressure on natural resources, create sustainable growth and jobs, and help the EU reach climate neutrality by 2050. The plan addresses the entire product life cycle—from design and production to consumption, reuse, and recycling—by introducing legislative and non-legislative initiatives that prioritize sustainable product design, prevent waste, and keep resources in the EU economy for as long as possible.

GreenTurn contributes directly to the CEAP's objectives by promoting circular practices in the fast-growing e-commerce sector. With returns in fashion and electronics creating significant reverse logistics flows, GreenTurn explores solutions that minimize the environmental impact of online shopping, such as reusable packaging, sustainable return options, and behavior-based interventions to reduce unnecessary returns. These approaches align with the CEAP's focus on product life cycle thinking, waste prevention, and the role of digital solutions in enabling circular business models.

2022, Digital Services Act (DSA) (Regulation (EU) 2022/2065)[51] & E-commerce Directive 2000[52]

The Digital Services Act (DSA) (Regulation (EU) 2022/2065) builds upon and updates aspects of the E-Commerce Directive (2000/31/EC). While the E-Commerce Directive set the foundation for online services in the EU, the DSA introduces stricter rules on transparency, accountability, and content moderation for online platforms, including e-commerce marketplaces. It ensures that digital services operate safely and fairly, addressing challenges like illegal content, consumer protection, and algorithmic transparency. The E-Commerce Directive remains in effect but is complemented by the DSA.

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[48] General Data Protection Regulation
[49] Circular Economy Action Plan
[50] Circular Economy Monitoring Framework
[51] Digital Services Act (DSA)
[52] E-commerce Directive 2000

2 mains goals:

- To create a safer digital space in which the fundamental rights of all users of digital services are protected
- To establish a level playing field to foster innovation, growth, and competitiveness, both in the European Single Market and globally.

GreenTurn supports and complements the aims of the DSA and E-Commerce Directive by promoting greater transparency and accountability in the e-commerce ecosystem, particularly around the environmental impacts of deliveries and returns. While the DSA strengthens user rights and marketplace responsibilities, GreenTurn addresses a critical gap: the lack of clear information on the carbon footprint of e-commerce logistics. By co-developing data-driven, zero-emission delivery solutions and testing them in real-world pilots, GreenTurn contributes to making online platforms more transparent, sustainable, and responsible—key ambitions of the DSA framework. Additionally, by involving diverse stakeholders and public authorities, GreenTurn helps translate technical and behavioural innovations into policy, supporting future regulatory levers to promote greener digital commerce.

2024, Packaging & Packaging Waste Regulation (EU) 2025/40[53]

The revised Packaging and Packaging Waste Regulation (Regulation (EU) 2025/40), adopted in December 2024, aims to reduce packaging waste, improve recyclability, and promote reuse across the EU. Applicable to all packaging, it introduces mandatory requirements such as full recyclability by 2030, minimum recycled content in plastic packaging, restrictions on harmful substances, and bans on certain single-use formats. It sets waste reduction targets per capita (-5% by 2030, -15% by 2040), limits empty space in packaging, and mandates deposit return systems for beverage containers by 2029. It also establishes clear labelling rules and exemptions for micro-enterprises.

This regulation is highly relevant to the GreenTurn project, which aims to reduce the environmental footprint of e-commerce through improved packaging and return practices. By promoting sustainable packaging choices, returnable solutions, and low-impact delivery and return options—such as in-store pick-up, time slots, and reusable packaging—GreenTurn supports the Regulation's objectives of waste prevention, circularity, and consumer engagement in sustainable behaviours.

2024, Product Environmental Footprint[54] and amendments foreseen to Directive 2005/29/EC

The *Product Environmental Footprint* (PEF) is a methodology developed by the European Commission to measure the environmental performance of products throughout their life cycle. It uses a life cycle assessment (LCA) approach to evaluate multiple environmental impacts — such as climate change, water use, resource depletion, and pollution — from raw material extraction to end-of-life. The aim of the PEF is to provide a harmonised and science-based framework for

[53] Packaging & Packaging Waste Directive (Regulation (EU) 2025/40)
[54] Product Environmental Footprint

assessing and comparing products' environmental impacts across the EU, helping companies improve sustainability and supporting informed consumer choices.

The **Directive 2005/29/EC**[55], known as the *Unfair Commercial Practices Directive*, establishes a European legal framework to protect consumers against business practices that may mislead or coerce them in their purchasing decisions. This regulation prohibits deceptive practices, such as false advertising or incorrect information about products or prices, as well as aggressive practices, including undue pressure or commercial harassment. Additionally, it requires companies to provide clear and complete information, avoiding the omission of essential data that could influence the consumer's decision. Its purpose is to ensure transparency and fairness in the European internal market, guaranteeing that consumers' decisions are based on truthful information and preventing distortions that could undermine their trust. Since its adoption in 2005, it has been key to harmonizing consumer protection across the EU and remains a fundamental pillar for regulating fair trade.

Amendments foreseen to Directive 2005/29/EC

The **Directive (EU) 2024/825**[56], which entered into force in March 2024, introduces significant amendments to Directive 2005/29/EC on unfair commercial practices and Directive 2011/83/EU on consumer rights to strengthen consumer protection against greenwashing and improve transparency in environmental claims. The directive prohibits unverified generic environmental claims, requires companies to provide clear and verifiable information on product durability, reparability, and sustainability, and expands the list of unfair commercial practices by including new prohibitions related to false or misleading environmental labels and claims. It also enhances consumer rights by ensuring better access to information related to sustainable products and services. Member States must transpose these changes by March 2026, with application effective from September 2026. These measures are part of the European Green Deal and aim to promote responsible business practices, increase consumer trust, and move towards a more sustainable and transparent market.

3.4. Updated new directives

2026, A Circular Economy Act[57]

The *EU Circular Economy Act*, expected in 2026, aims to reshape how industries use resources, reduce waste, and improve resource efficiency. It will build upon previous EU efforts like the 2020 Circular Economy Action Plan and focus on creating a more circular economy by promoting recycling, reducing waste, and ensuring resources are kept within the EU economy longer. This act is expected to remove obstacles to the free movement of recycled materials, boost demand for circular products, and enhance strategic autonomy by reducing reliance on third countries for resources.

[55] Directive 2005/29/EC
[56] Directive 2024/825
[57] Circular Economy Act

3.5. Complementary references

Extended Producer Responsibility (EPR)[58] as a circular economy instrument

Extended Producer Responsibility (EPR) is a policy approach where producers are made financially and/or physically responsible for the treatment or disposal of their products once they reach end-of-life. This can include:

- Collection, recycling, and proper disposal of used products.
- Designing more sustainable products, as producers are incentivized to make items easier to recycle, repair, or reuse.

EPR is considered one of the key performance-based economic instruments in the circular economy policy toolbox. It is often used alongside:

- Eco-modulated fees: producers pay different fees depending on how recyclable, reusable, or repairable a product is.
- Deposit-refund systems (DRS).
- Tax incentives and subsidies that reward producers who make more circular choices.

EPR links the product's design phase with its end-of-life costs and impacts. This encourages producers to:

- Use fewer polluting or non-recyclable materials,
- Improve product durability and reparability,
- Shift towards circular design principles,
- And reduce the overall environmental footprint.

[58] Extended producer responsibility and economic instruments (EPR)

3.6. Recommendations of the Expert Group on Urban Mobility (EGUM)[59]

The European Commission established EGUM, the Expert Group on Urban Mobility, to support the implementation of the New EU Urban Mobility Framework. As part of the EU's broader strategy for sustainable and smart mobility, EGUM brings together experts from member states, local authorities, and key stakeholders to provide guidance on urban mobility policies. The group plays a crucial role in promoting best practices, developing innovative mobility solutions, and ensuring effective policy coordination across Europe. The EGUM subgroup on urban logistics established three sets of recommendations addressed to EC, national governments and ministries, local authorities as well as private stakeholders. Some are particularly relevant to GreenTurn's scope (from SULPs-related set of recommendations).

R5: Set a policy framework to encourage collaborative logistics to share vehicles and assets
Action R5.1: Encourage and facilitate vehicles and logistics assets (e.g. microhubs, parcel lockers) sharing through standardised processes, load units, digital platforms and data spaces.
The adoption of 'white label' hubs might assist logistics service providers to become more sustainable and to provide a significant contribution to zero-emission. The main challenge is to make the micro hub concept profitable, as margins in the sector are small. Therefore, efforts from the local sector should strive to (i) develop a sustainable financing model, (ii) a well-thought-out design of the micro hub, which is crucial for efficient use and therefore success, (iii) build micro hubs on the right locations in the city. In this way, white labels are an option but there are other ways (e.g. allowing companies to distribute in districts when they have a minimum volume to distribute in that district or others, e.g. Physical Internet).

R7: Develop awareness campaigns and incentive schemes to encourage sustainable e-commerce activities from business and citizens
Action R7.1: Awareness campaigns to citizens on impacts of e-commerce on environment
When customers are given additional knowledge about how their actions can have an impact on sustainability, it has a favourable influence on their purchasing decisions. This concept is at the core of the CountEmissions EU regulation proposal, which will provide a multimodal, door-to-door harmonised framework to calculate and disclose Well-To-Wheel GHG emissions of transport services. Consumers and operators will be able to shift their choices towards the most environmentally friendly logistics solutions. Retailers may positively contribute to the process by giving more information about the impact upon the environment of single purchases and proposed alternative options for greener deliveries. Customers are asking for more and more details on the delivery of their purchases. Customers who do not currently have a simple method to grasp the implications of their actions must be given consistent information.

[59] Expert Group on Urban Mobility

Action R7.2: Propose more sustainable delivery options to consumers
Retailers may provide and encourage more sustainable delivery practices. Alternative delivery options to customers should not be causing additional flow fragmentation, as this might have negative impacts (e.g., having the standard vehicle and the low- or zero-emissions vehicle deliver). Free returns typically result in extra transportation, which must be handled carefully. [...]
Action R7.3: Setting up incentive measures to award those who choose sustainable deliveries
There is a limited role so far from governments and cities to nudge consumers decisions on sustainable deliveries. One-off attempts have been made to charge large companies for the use of public space of large e-commerce businesses. However, such an approach towards taxation has found mixed opinions from the public and private sectors about its effectiveness in the medium-long term. Incentive schemes encouraging businesses to provide various options and information to consumers to enable them to choose the most sustainable options are an alternative.

3.7. Lessons learned

This chapter compiles relevant policies, initiatives, regulations and directives related to sustainable e-commerce logistics.

Cross-sectoral policies drive e-commerce logistics, starting from urban mobility (e.g. Sustainable and Smart Mobility Strategy), competitiveness (e.g. CountEmissions EU) and circular economy (e.g. Packaging & Packaging Waste Regulation).

This chapter serves as reference on existing or upcoming policies showcasing the legislative landscape in which GreenTurn will evolve. The outcomes of the project will then feed recommendations and guidelines to build on these policies and regulations.

4. Conclusions

This deliverable has provided a comprehensive overview of urban logistics challenges and solutions across various European cities, while simultaneously analysing the alignment of relevant EU policies with the GreenTurn project's objectives of fostering more sustainable e-commerce. It has become evident that cities across the board share a strong commitment to significantly reducing emissions, with many targeting climate neutrality by 2030, and a collective focus on promoting sustainable mobility and improving logistics management to alleviate congestion and enhance air quality within urban environments.

However, achieving these ambitions is consistently hampered by several key challenges identified in city profiles. A pervasive issue is the difficulty in collecting comprehensive and accurate data on logistics flows and e-commerce activities, which is critical for informed policy development. Furthermore, the absence of harmonised national or regional guidelines for sustainable urban logistics often complicates the implementation of effective local policies, especially for smaller or less structured municipalities. Lastly, effectively engaging with logistics service providers and other key stakeholders to promote data sharing and collaborative sustainable solutions remains a common and significant hurdle.

Despite these challenges, cities are actively pursuing and experimenting with various best practices and innovative solutions. When it comes to data, it's worth mentioning Lyon's logistics observatory and Milan's collaboration with universities to model logistics ecosystems, demonstrating the potential for more data-driven decision-making. Regulatory measures, such as Zaragoza's Low Emission Zone, are being implemented to manage urban freight and reduce environmental impact. Innovative logistics solutions, like Vienna's pilot for construction logistics consolidation and Oslo's deployment of charging infrastructure for electric commercial vehicles, showcase diverse approaches to enhancing sustainability and efficiency. Furthermore, cities like Utrecht have successfully engaged in meaningful dialogues with LSPs to selectively access valuable data, and offering incentive best practices, such as bus lane sharing and priority access to ZEZ for LSP who perform consolidation.

The analysis of EU policies in Chapter 4 reveals a supportive framework for urban efforts, promoting sustainable urban mobility, digitalization, and integrated freight planning. Key directives and strategies include the ITS Directive, the 2011 White Paper on Transport Policy, the 2013 Urban Mobility Package, the Sustainable and Smart Mobility Strategy, and the New EU Urban Mobility Framework. The revised TEN-T Regulation further mandates Sustainable Urban Mobility Plans (SUMPs) for major cities, reinforcing strategic urban transport planning. Additionally, initiatives like the EU Missions on 100 climate-neutral and smart cities and the European Declaration on Cycling provide broad support for decarbonizing urban transport and promoting sustainable modes, such as cargo bikes for logistics.

From a competitiveness standpoint, the European Green Deal and the Green Deal Industrial Plan directly influence e-commerce logistics by promoting zero-emission transport and supporting the deployment of clean technologies like electric delivery vehicles and associated charging infrastructure. The revised Driving Licence Directive also aids the adoption of electric vans by increasing permissible vehicle weight for B licence holders. Circular economy policies, including

the Circular Economy Action Plan and the Packaging & Packaging Waste Regulation , align directly with efforts to reduce e-commerce's environmental footprint through sustainable packaging and return practices. Furthermore, the Digital Services Act (DSA) and initiatives like CountEmissions EU contribute by promoting transparency within the e-commerce ecosystem, especially concerning environmental impacts.

In conclusion, this deliverable notes how cities that proactively invest in stakeholder engagement and data collection and analysis have a better understanding of the logistics landscape and have the potential to implement more impactful measures. National and regional authorities are urged to develop consistent guidelines and provide support for cities' efforts, aligning with the strategic objectives outlined in EU policies. Private companies are encouraged to share data and collaborate with cities to develop and invest in sustainable logistics solutions, thereby contributing to the broader goals of the Green Deal and related industrial plans. By collectively embracing these recommendations and leveraging the supportive, evolving EU policy landscape, significant progress can be made towards achieving sustainability goals and enhancing the efficiency and environmental performance of urban logistics across Europe.

5. Annex

Interview Template

BLOCK 1: CONTEXT AND POLICIES
1. What are the city's main objectives in mobility, logistics, and transport emissions? **2.** Which are the main challenges to achieve them? **3.** What are the city's sustainable mobility & logistics initiatives? (LEZ, access-regulated city centre, curb side management, tax incentives or subsidies for LSPs, etc.) **4.** Are there any local, regional or national policies/frameworks affecting e-commerce and more broadly logistics? (e.g., SUMPs and SULPs / Climate Contract / National Resilience Plans)? **5.** Other relevant projects in mobility and logistics: do you have best practices or recommendations? If this is the first project on mobility and logistics, the best practices and recommendations can also come from other experiences. **6.** How has e-commerce user behaviour changed in the past 4-5 years? Are inhabitants ordering more products online or have they returned to physical stores?

BLOCK 2: LOGISTICS LANDSCAPE
7. Are there neighbourhoods or areas particularly important when it comes to generation or attraction of logistics flows? **8.** Regarding e-commerce, does the city have an overview on numbers/figures/phenomena? (e.g., concentration of deliveries in one particular neighbourhood, logistics vehicles causing congestion, etc.) **9.** Companies and LSPs: is there a big player dominating the local market (post service, large e-commerce like Amazon, etc.)? Does the local landscape of smaller businesses create a lot of logistics flows as well? **10.** What are the most important economic activities for logistics (retail/horeca/industry/etc.)? Which activities generate the most flows? **11.** Which are the most common types of vehicles used for logistics operations in the city (traditional vans/ electric vans/ large vans/ small vans/ cargo bikes/ other)? Do you have any data regarding their share in the modal split?

BLOCK 3: DATA PREPAREDNESS
12. Is the city collecting data on logistics? Is there a plan for data collection? **13.** How/for what purposes would the city use the data? **14.** Which data is the city is currently missing and that would be useful? **15.** Which stakeholders have to be involved in data collection, how easy is it to involve them? **16.** What are the problems foreseen / encountered when collecting the data?

BLOCK 4: GREENTURN AND NEXT STEPS (or CODEZERO AND NEXT STEPS for the CodeZERO cities)
17. The role of the pilot: how will the pilot contribute to the city ambitions, how it responds to certain challenges, what are the expected outcomes and the remaining challenges **18.** Challenges for the future: not only to emissions and logistics trends, but also on the data and digitalisation

BLOCK 5: DIGITAL TOOLS / TOOLKITS
19. Has the city used / is using toolsets/ toolkits to manage mobility and logistics challenges? If yes, which one and what was the challenge this toolkit helped you tackle? (e.g., ULaaDS toolbox,) **20.** What kind of toolkit would you find useful to address e-commerce and last mile logistics issues?