

# European strategies for urban logistics

16 case studies of innovative initiatives in  
Europe

Report

October 2023

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## 1. Introduction

In this study, we examine the efforts of 16 cities in Europe (Figure 1) to create a sustainable and efficient urban logistics system. The study creates an inventory of the innovative measures and policies used by these cities and highlights best practices. We also review inspiring examples from cities around the world to provide a global perspective on the issue.

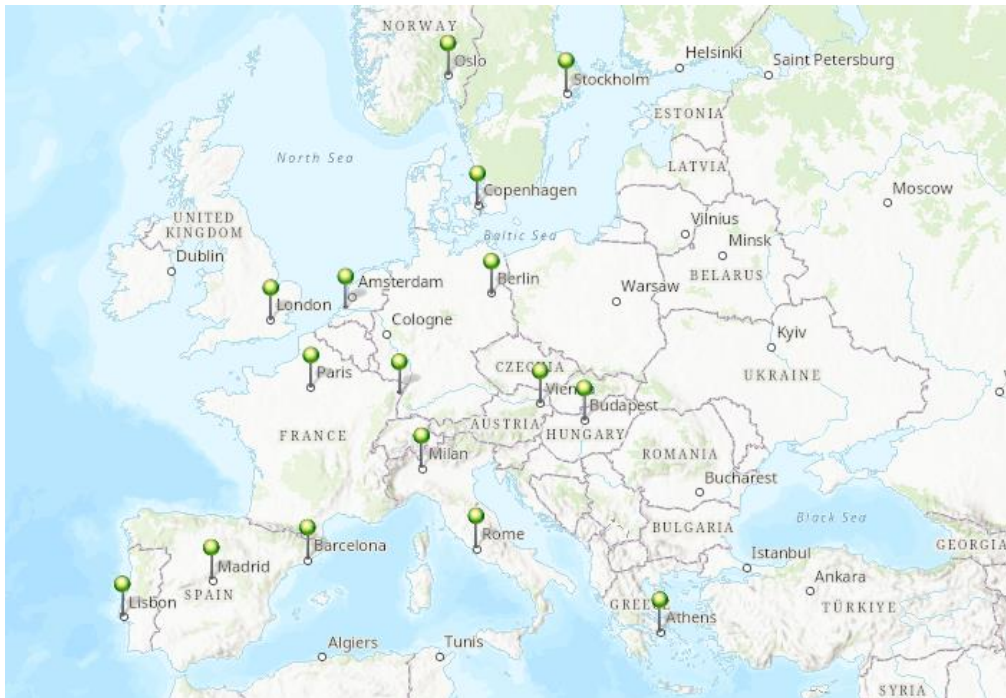
In major cities, the last mile of urban logistics consumes a significant amount of time and energy due to road closures, construction, heavy traffic, and parking restrictions. The last mile may account for over 50% of the total cost of delivery (Siegfried et al., 2021). The boom in e-commerce has made it even more challenging to distribute packages efficiently, particularly in congested urban areas.

According to Toilier et al (2016), heavy goods vehicles account for up to 15% of traffic but contribute up to 25% of urban transport-related CO<sub>2</sub> emissions and between 30-50% of particulate matter and nitrogen oxides in urban environments. A study of European Union countries shows that 60% of cities face significant difficulties in urban logistics management and 55% of vehicle emissions are caused by goods distribution (Faccio & Gamberi, 2015).

When planning for urban logistics, cities prioritize decarbonization, improved health and safety, and improved reliability and efficiency of their logistics system. This report will be a valuable resource for cities, helping them understand what measures and policies are effective and providing them with the information they need to create their own innovative solutions.

The 16 cities were chosen for their diverse urban environments, significant economic, cultural, and political influence, innovative measures to improve urban logistics, and representation of different political and economic systems. This selection provides a rich and diverse dataset for analysis, offering valuable insights for cities to create their own innovative solutions to the pressing challenge of sustainable urban logistics.

Figure 1. The 16 cities studied



- |                       |                            |
|-----------------------|----------------------------|
| 1. Paris, France      | 9. Berlin, Germany         |
| 2. Strasbourg, France | 10. Rotterdam, Netherlands |
| 3. Madrid, Spain      | 11. London, UK             |
| 4. Barcelona, Spain   | 12. Oslo, Norway           |
| 5. Milan, Italy       | 13. Budapest, Hungary      |
| 6. Rome, Italy        | 14. Vienna, Austria        |
| 7. Lisbon, Portugal   | 15. Stockholm, Sweden      |
| 8. Athens, Greece     | 16. Copenhagen, Denmark    |

## 2. SUPPORT FOR START-UPS

Support for startups in urban logistics is becoming increasingly important in Europe as cities seek to promote innovation and improve the efficiency of their transportation systems. This support takes many forms, including financial incentives, mentorship programs, and access to funding and resources.

One of the key ways that European cities are supporting startups in urban logistics is through the creation of incubator and accelerator programs. These programs provide startups with a range of resources and support, including access to funding, mentorship, and office space. By providing startups with these resources, cities are helping to foster innovation and promote the growth of new and exciting transportation technologies.

Another important way that European cities are supporting startups in urban logistics is through the development of public-private partnerships. These partnerships are designed to bring together private companies, governments, and other stakeholders to work together on transportation initiatives that are designed to improve the efficiency of the transportation system and reduce congestion. By working together, these partnerships can help to promote the growth of innovative transportation technologies and support the development of new startups in the sector. In addition, many European cities are providing financial incentives and subsidies to startups in urban logistics. These incentives include tax credits, grants, and subsidies, which are designed to encourage the growth of these startups and help to offset the cost of starting a new business.

Finally, European cities are also supporting startups in urban logistics through the creation of innovation hubs and centers. These centers provide startups with access to resources and support, including access to funding, mentorship, and office space. They are also a key way that cities can bring together private companies, governments, and other stakeholders to work together on transportation initiatives that are designed to improve the efficiency and sustainability of the transportation system. By fostering collaboration and promoting innovation, these innovation hubs and centers play a critical role in supporting the growth of startups in urban logistics in Europe.

Through incubator and accelerator programs, public-private partnerships, financial incentives, promotion of entrepreneurship and innovation, and innovation hubs and centers, European cities are creating an environment that is supportive of startups in urban logistics.

Case Study: Madrid, Spain

The [Lehnica Changer Challenge](#) is a collaborative innovation program aimed at promoting the development of new products and services in the postal sector. 8 winning startups have been selected to work closely with Correos, a leading postal services provider in Spain, to validate their potential as innovative solutions.

During the recurring 6-month program, the startups receive a total of 15,000 euros for the development of their projects, as well as access to the Correoslabs ecosystem and specialized innovation coaches to help bring their ideas to fruition. Additionally, the startups will have the opportunity to work from free flexible office space in a coworking location in Las Tablas.

For startups looking to make a real impact in the postal sector, as well as for Correos, which will have access to a range of new and innovative ideas that could transform the way postal services are delivered, the Lehnica Changer Challenge offers a unique platform for startups and businesses to co-create and drive innovation together, ultimately leading to a more sustainable and efficient future for the postal industry.

### **3. CURBSIDE MANAGEMENT**

Curbside management involves the optimization of space utilization, the coordination of delivery times, and the management of delivery vehicles to minimize congestion, reduce emissions, and improve safety for all road users. In Europe, curbside management has become an essential issue for cities as they seek to manage the growth of e-commerce and the rise of home deliveries. With an increase in the number of delivery vehicles on the roads, cities have had to look at new ways of managing the flow of traffic and delivery processes to avoid congestion, improve safety, and reduce emissions.

Another approach is the use of curbside delivery zones, which are designated areas where delivery vehicles can park to load and unload packages. This helps to minimize congestion and improves safety by reducing the number of delivery vehicles on the roads, as delivery vehicles are able to park in a designated area to complete their deliveries. This also reduces the number of delivery vehicles on the roads, reducing emissions and improving air quality.

Another important aspect of curbside management in Europe is the optimization of delivery times. Many cities have implemented “delivery windows”, which are specific times during the day when delivery vehicles can complete their deliveries. This helps to reduce congestion and improve safety by ensuring that delivery vehicles are not competing with other road users for road space. Delivery windows also reduce emissions, as delivery vehicles are able to complete their deliveries during off-peak times, reducing the need for multiple delivery trips.

Cargo bike parking plays an important role in curbside management strategies implemented in many European cities. These cities have adopted "last mile delivery" solutions that utilize alternative modes of transportation, including electric bikes and cargo trikes, to complete the final leg of delivery journeys. By reducing the number of delivery vehicles on the road, these solutions improve air quality, reduce emissions, alleviate congestion, and enhance safety by decreasing competition for road space. Effective cargo bike parking infrastructure is necessary to support these alternative modes of transportation and to ensure the efficient use of curbside space

Finally, cities in Europe are also utilizing smart technology to improve curbside management. This often includes the use of GPS tracking and real-time data to monitor the flow of delivery vehicles and identify areas of congestion. This information can then be used to optimize delivery times and improve the management of delivery vehicles.

In conclusion, curbside management in urban logistics is an important issue in Europe, as cities seek to manage the growth of e-commerce and the rise of home deliveries. The development of shared delivery spaces, curbside delivery zones, optimized delivery times, last-mile delivery solutions, and the use of smart technology all play a key role in reducing congestion, improving safety, and reducing emissions.

Case Study: Barcelona, Spain

Barcelona City Council and major business and trade union associations have created a [Municipal Strategy for Urban Distribution of Goods \(DUM\) 2030](#) to enhance the sustainability and efficiency of urban goods distribution. The plan aims to reduce emissions from delivery vehicles by 50% and have 40% of online purchases collected from designated points by 2030. The collection point network will be expanded to ensure accessibility to everyone within a 200-meter radius. The plan includes increasing the number of bicycles and delivery cycles tenfold, providing an urban freight service on the rail network, and encouraging the use of sustainable vehicles to reduce emissions. To ensure effective communication between consumers and distribution companies, a DUM office will be created. The SPRO application will also be extended to 75% of metropolitan municipalities. The plan aims to improve the efficiency and sustainability of urban goods distribution in Barcelona through various measures.

#### 4. DEPLOYMENT OF ELECTRIC FLEETS & CHARGING STATIONS

The deployment of electric charging stations has become a crucial aspect of urban logistics in Europe, as cities seek to promote sustainable transportation and reduce emissions. The growth of electric vehicles (EVs) has created a demand for charging infrastructure, and cities have had to respond by investing in charging stations to support the growth of EVs.

In Europe, there are a number of different charging station models and deployment strategies. One approach is the deployment of fast-charging stations, which allow EVs to charge quickly and effectively. Fast-charging stations located strategically within urban areas, such as near delivery hubs or in public parking lots allow electric delivery vehicles to recharge during the day or overnight, without requiring long periods of downtime. Additionally, some cities are experimenting with innovative solutions such as wireless charging pads embedded in the road surface, which can provide a seamless and convenient charging experience for delivery vehicles operating in urban environments.

The deployment of charging stations is also supported by a range of financial incentives and subsidies, which are aimed at encouraging the growth of EVs and the deployment of charging infrastructure. These incentives include tax credits, grants, and subsidies, which help to offset the costs of installing and operating charging stations.

In addition, many European cities have developed partnerships with private companies and organizations to deploy charging infrastructure. This allows cities to leverage private sector expertise and funding to support the growth of EVs and the deployment of charging infrastructure.

In conclusion, the deployment of electric charging stations is an important aspect of urban logistics in Europe, as cities seek to promote sustainable transportation and reduce emissions. With a range of financial incentives, partnerships with private companies, and the use of smart technology, cities are well-positioned to support the growth of EVs and the deployment of charging infrastructure.

Case Study: London, United Kingdom

London has successfully installed over [6,000 charging points](#) for electric vehicles, with more than 500 rapid charging points and over 5,500 residential charging points. This electric vehicle

infrastructure is essential for urban logistics companies operating in London, where a growing number of businesses are transitioning to electric delivery fleets. The capital's almost 4,000 electric taxis also rely on these charging points to keep their vehicles running throughout the day. To further support the transition to electric delivery vehicles, the Mayor's Electric Vehicle Infrastructure Delivery Plan estimates that London may require up to 4,000 rapid charging points by 2025. London has already established the first rapid charging hub in Stratford International car park, which features six charging points, and plans to install two additional hubs at Baynard House and Glass Yard with six and eight rapid charging points respectively. With a quarter of all the UK's charge points located in the capital, London is leading the way in EV infrastructure for urban logistics.

## **5. CLEAN DELIVERY VEHICLES**

Clean vehicles, such as electric vehicles (EVs) and alternative fuel vehicles (AFVs), are becoming increasingly popular in urban logistics as a way to reduce emissions and promote sustainability. By using these vehicles, delivery companies can make their deliveries more efficiently, reduce their environmental impact and support sustainable transportation in European cities.

In addition, the acquisition/rental/subsidies of e-vans and e-trucks are essential to support the deployment of EVs for logistics purposes in European cities. The use of e-vans and e-trucks helps to reduce emissions, increase efficiency and support sustainable transportation in urban environments. Policymakers and stakeholders need to develop a comprehensive approach to address the acquisition, rental and subsidies for these vehicles, to promote their use and overcome the barriers to their adoption.

The issue of e-mopeds is also becoming increasingly important, particularly for last-mile deliveries and short trips in cities. E-mopeds can reduce emissions and congestion in urban areas, making them an attractive alternative to traditional gasoline-powered mopeds. However, the adoption of e-mopeds is often hindered by the lack of charging infrastructure, limited range and high acquisition costs. Therefore, policymakers and stakeholders need to develop a comprehensive approach to address the acquisition, rental and subsidies for e-mopeds, and to promote their use in urban logistics.

In conclusion, the use of clean vehicles such as EVs, AFVs and e-mopeds can promote sustainable urban logistics by reducing emissions and supporting sustainable transportation in European cities. The deployment of charging infrastructure, financial incentives, partnerships with private companies and smart technology can support the growth of these vehicles and help to overcome the barriers to their adoption. The acquisition/rental/subsidies of e-vans, e-trucks and e-mopeds are also essential elements to promote sustainable urban logistics.

### **Case Study: Berlin, Germany**

The use of clean vehicles, optimization of logistics processes, and promotion of alternative modes of transport are all important steps towards achieving a more sustainable urban logistics system in Berlin. In Berlin, DHL is actively implementing their GoGreen program, which aims to promote sustainable urban logistics through the use of clean vehicles. DHL has introduced electric delivery vehicles in the city, which are specifically designed for last-mile deliveries in urban areas. These vehicles have zero emissions, are energy-efficient, and produce significantly less noise pollution



compared to traditional diesel delivery vans. DHL also uses cargo bikes in Berlin for deliveries, which are another form of clean vehicles.

Moreover, DHL's GoGreen program in Berlin focuses on optimizing logistics processes to reduce the carbon footprint of their operations. The company has implemented efficient route planning systems to minimize the distance travelled by their delivery vehicles, reducing emissions and saving fuel. The program also encourages the use of alternative modes of transport such as trains and barges for long-distance transportation, which are more eco-friendly than road transport.

## 6. OFF-HOUR DELIVERIES

Off-hour deliveries in urban logistics are becoming increasingly important as cities seek to reduce congestion and improve the efficiency of their transportation systems. This involves the delivery of goods outside of traditional business hours, typically between the hours of 7 am and 8 pm. By avoiding peak hours, off-hour deliveries can reduce congestion on the roads and help to improve the flow of traffic.

There are a number of different strategies and approaches used to support off-hour deliveries in Europe. One approach is the use of real-time data and GPS tracking to monitor the flow of delivery vehicles and optimize delivery times. This information can be used to identify the best routes for off-hour deliveries and to ensure that delivery vehicles are able to make their deliveries quickly and effectively.

In addition, many European cities have developed partnerships with private companies and organizations to promote off-hour deliveries. This includes partnerships with delivery companies, retailers, and other businesses that are interested in reducing congestion and improving the efficiency of their transportation systems.

Off-hour deliveries are also supported by a range of financial incentives and subsidies, which are aimed at encouraging the growth of this type of delivery and the deployment of off-hour delivery zones. These incentives include tax credits, grants, and subsidies, which help to offset the costs of operating off-hour delivery zones and implementing new delivery technologies.

In conclusion, off-hour deliveries are an important aspect of urban logistics in Europe, as cities seek to reduce congestion and improve the efficiency of their transportation systems. With a range of strategies and approaches, financial incentives, and partnerships with private companies and organizations, cities are well-positioned to promote the growth of off-hour deliveries and improve the sustainability of their transportation systems.

### Case Study: Stockholm, Sweden

The City of Stockholm, Sweden initiated a [2-year off-peak delivery pilot](#) project in 2014 to reduce traffic congestion, make deliveries more flexible, and encourage transport companies to invest in environmentally friendly trucks. Despite regulations prohibiting deliveries between 10:00 p.m. and 6:00 a.m. due to noise concerns, two companies were allowed to participate in the pilot to test nighttime deliveries. The results showed improved efficiency, shorter delivery times, fuel cost savings, and better working conditions for drivers. KTH Royal Institute of Technology managed the pilot with support from two major truck producers, a company specializing in silent systems, two major logistics companies, and an international retail company. The benefits of off-peak deliveries

exceeded the costs and all participants were pleased with the improvements in freight mobility. Another pilot project may be considered to build off the success of the first pilot study.

Case Study: PIEK Program, the Netherlands

The [PIEK program](#) in the Netherlands is a noise reduction initiative that aims to reduce noise pollution caused by delivery trucks and improve the quality of life for residents in urban areas. The program sets noise limits for delivery trucks and requires trucks to meet certain noise reduction standards. Trucks that meet these standards are awarded a PIEK certificate, which allows them to operate during restricted hours when noise regulations are more stringent.

The program has been successful in reducing noise pollution in the Netherlands, with noise levels in urban areas decreasing by up to 10 decibels. The use of quieter delivery trucks has also improved the working conditions for truck drivers, as they are able to operate in restricted areas during early morning hours without disturbing residents.

The PIEK program has been adopted by several other European countries, and there is a growing interest in noise reduction initiatives in the logistics industry. The use of quieter vehicles is not only beneficial for residents, but it also supports the growth of sustainable transportation and helps companies meet environmental targets.

## **7. LOW & ZERO-EMISSION ZONES**

In recent years, cities in Europe have been taking steps to reduce air pollution and improve air quality. One of the most effective ways to do this is by creating Low and Zero-Emission Zones (LZEZs), where only vehicles with low or zero emissions are allowed to enter. The goal of these zones is to reduce the number of harmful pollutants emitted by vehicles, such as nitrogen oxides, particulate matter, and carbon monoxide, which have negative impacts on human health and the environment.

LZEZs have been implemented in a very high number of cities across Europe (more than 200). These zones vary in size and scope, but the basic principle remains the same: only vehicles with low emissions are allowed to enter. This typically means that only electric vehicles, hybrid vehicles, and vehicles powered by alternative fuels are allowed to enter the zone. In some cases, LZEZs are also restricted to vehicles with specific emissions standards, such as Euro 4 and 6 trucks.

The implementation of LZEZs has had positive impacts on air quality and human health. In cities like Paris and Berlin, the introduction of LZEZs has been linked to a reduction in the levels of nitrogen oxides and particulate matter in the air. This has had a positive impact on the health of residents, as air pollution is known to cause respiratory problems and other health issues.

LZEZs are also helping to reduce carbon emissions and promote the use of alternative fuels. By restricting access to vehicles with low emissions, cities are encouraging residents to switch to electric vehicles or vehicles powered by alternative fuels. This has the potential to reduce carbon emissions and help to mitigate the impacts of climate change.

While LZEZs have been successful in a number of cities across Europe, there have also been challenges. Some drivers have resisted the implementation of LZEZs, as they feel that it restricts their freedom of movement. In addition, there have been concerns about the cost of

implementing LZEZs, as well as the technical and administrative challenges associated with enforcing them.

Despite these challenges, LZEZs have proven to be an effective tool for reducing air pollution and improving air quality in European cities. As cities continue to grow and face new environmental challenges, LZEZs are likely to play an increasingly important role in promoting sustainable transportation and improving the health of residents.

#### Case Study: Rotterdam, Netherlands

In Rotterdam, freight is a major contributor to emissions, with vans and lorries accounting for over a third of CO<sub>2</sub> emissions and over half of NO<sub>x</sub> emissions in the city, despite making up less than 12% of the vehicles on the roads. To address this issue, the City of Rotterdam has committed to meeting EU standards for NO<sub>x</sub> and reducing CO<sub>2</sub> emissions by 49% by 2030 and has developed a [roadmap for zero-emission city logistics](#). This roadmap is a crucial plan to achieve emissions targets and builds on a prior collaboration with seven major logistics firms.

The implementation of a zero-emission zone for city logistics is a core part of the strategy. However, transitioning to zero-emission freight faces obstacles such as the limited availability of emission-free heavy goods vehicles and fast-loading infrastructure, as well as the high purchase price of these vehicles. To address these issues, Rotterdam offers a range of incentives such as the shared use of bus lanes for emission-free lorries, advice from logistics brokers, and purchase subsidies for electric vans.

The Zero Emission Logistics policy from Rotterdam aims to achieve zero-emission status for logistics operations in the city by 2025. To support this transition, the city has implemented a range of measures, including the provision of financial incentives and subsidies for the acquisition of zero-emission vehicles. The policy also includes the use of smart logistics solutions such as route optimization and real-time tracking to reduce emissions and improve efficiency in the logistics sector.

## 8. URBAN LOGISTICS HUBS

Urban logistics facilities are a common approach in Europe. These hubs are logistics and delivery spaces that are strategically located to reduce the number of delivery vehicles on the roads. Urban hubs allow delivery vehicles to collect and drop off packages in one central location, reducing the need for multiple delivery trips. This approach not only reduces the number of delivery vehicles on the roads but also reduces emissions and fuel consumption, as delivery vehicles are able to travel longer distances with full loads, reducing the number of empty trips.

Urban hubs have become increasingly popular in European cities due to their potential to reduce traffic congestion, air pollution, and greenhouse gas emissions. Their success largely depend on their location, design, and management. Ideally, they should be located in areas that are easily accessible to delivery vehicles, but not too close to residential areas. Hubs should also be designed to accommodate a range of delivery vehicle sizes and should have adequate loading and unloading space.

To ensure efficient and effective management of urban logistics hubs, cities in Europe have developed a range of policies and regulations. For example, some cities require companies to use

hubs for certain deliveries (eg building sites), while others provide financial incentives. Additionally, some municipalities have promoted the implementation of specific urban hubs called urban consolidation centers (UCCs) where goods delivery is shared by several transport operators.

Urban hubs increasingly benefit from smart technologies, such as real-time tracking and monitoring, to improve their management.

In conclusion, urban logistics hubs are a promising approach to urban logistics management in Europe. They offer a range of benefits, including reduced traffic congestion, air pollution, and greenhouse gas emissions. Their success largely depends on their location, design, and management.

Case Study: Paris, France

One increasingly common type of urban logistics facilities is micro-hubs. The city of Paris and logistics company Sogaris have been testing in 2022-2023 two wooden cages as [micro-hubs for local delivery](#) in the city. Designed by Moon architectures, these micro-hubs serve as supply points for last-mile deliverymen by bike, operated by the Olvo cooperative and Ecolotrans. They also function as waste collection points, which can be transported by bike-cargo, reducing the length of truck tours. The micro-hubs are part of a larger delivery chain, starting with mega-warehouses in outer suburbs and continuing with slightly smaller distribution centers in inner suburbs, and then with urban platforms on the edge or within the ring road. The new delivery points are part of Paris' efforts towards a less carbon-intensive logistics system. The micro-hubs were built in place of parking lots for motor vehicles, as part of the city's policy of transformation and reappropriation of public space.

## 9. INTERNATIONAL CASE STUDIES

Inspiration for innovative measures and policies in urban logistics often comes from outside of Europe. Cities around the world are facing similar challenges and many are finding creative and effective solutions. By looking to these other cities, European cities can learn from their experiences and adapt their own policies to create a more efficient, sustainable, and innovative transportation system. This not only helps to improve the quality of life for residents, but it also benefits the local economy by reducing congestion, improving air quality, and boosting competitiveness. By exploring the best practices and lessons learned from cities around the world, European cities can stay ahead of the curve and remain at the forefront of urban logistics innovation.

Case Study: Seattle, Washington, USA

The [Urban Freight Lab \(UFL\)](#) is a partnership between private industry, academic researchers, and public transportation agencies housed at the University of Washington. The UFL aims to develop solutions for businesses delivering goods in urban settings and cities trying to manage limited curb and parking space. They collect original and existing data, conduct analyses, develop promising strategies, and pilot-test those strategies in urban settings. The UFL is a structured work group made up of industry members and the City of Seattle Department of Transportation (SDOT) who work to improve the management of both public and private operations of urban goods delivery systems. The UFL adheres to four principles when designing methodologies: replicability, cost-

effectiveness, ground-truthing, and quality control. The lab is an innovative public-private partnership and aims to identify priority problems for future research projects.

#### Case Study: Montreal, Canada

The [Colibri mini-hub project](#) in Montreal aims to make urban logistics greener by implementing decarbonized delivery systems. This system involves using cargo bikes or small electric vehicles for the final leg of the delivery route, instead of using a fleet of trucks to deliver each parcel directly to the recipient's door. The project has shown that this mode of delivery offers numerous benefits, such as reducing traffic, congestion, noise, and air pollution.

The pilot project, Colibri Maisonneuve, deployed downtown in 2019, was a clear winner for the environment and the economy. Only one truck was required, rather than the five that were needed previously. Cargo bikes also helped reduce operating costs by 30 to 40 percent. After the success of Colibri Maisonneuve, a second local mini-hub, Colibri Iberville, was recently established in the eastern part of the Plateau Mont-Royal.

The city intends to support the industry so that other mini-hubs can be implemented where population density justifies it. This is one of the concrete means identified to meet the city's sustainable mobility objectives, notably in the Climate Plan, the Transportation Electrification Strategy 2021-2023, the 2021 Economic Recovery Plan, and the City Vision and the Land Use and Mobility Plan.

#### Case Study: Shenzhen, China

Shenzhen, [a global leader](#) in electric vehicle (EV) deployment for urban logistics, has grown its fleet of electric logistics vehicles (ELVs) from 300 in 2015 to almost 62,000 at the end of 2018. To accelerate EV and charging infrastructure deployment and to inform approaches to logistics electrification in other cities, this report analyzes and shares Shenzhen's experience with ELVs. The report highlights the commercial and policy factors that have supported the rapid deployment of EVs in the city, including subsidies, exemptions from urban access restrictions, and strict emissions requirements for internal combustion engine (ICE) logistics vehicles.

The city has also introduced policy measures to improve EV charging infrastructure, such as subsidies for charging infrastructure construction and mandates for charger installation. However, the report identifies mismatches between charging preferences and availability, creating problems for owners and operators of ELV fleets, charging stations, and the electricity grid. To address these challenges, the report recommends planning processes that incorporate data on charging demand and pricing strategies that balance driver convenience and cost to the grid.

## REFERENCES

- Colibri: Mini-hubs to decarbonize parcel delivery. Montreal. (2022). Retrieved March 9, 2023, from <https://montreal.ca/en/articles/colibri-mini-hubs-to-decarbonize-parcel-delivery-16318>
- Correos. (n.d.). Lehnica Changer Challenge. Retrieved March 9, 2023, from <https://labs.correos.es/es/es/startups>
- Electromobility. DPDHL. (2023). Retrieved March 9, 2023, from <https://www.dpdhl.com/en/media-relations/specials/electro-mobility.html>
- Fu, J., & Jenelius, E. (2018). Transport efficiency of off-peak urban goods deliveries: A stockholm pilot study. *Case Studies on Transport Policy*, 6(1), 156–166. <https://doi.org/10.1016/j.cstp.2018.01.001>
- London hits Electric Vehicle Charging Points Milestone. London City Hall. (2021, January 21). Retrieved March 9, 2023, from <https://www.london.gov.uk/press-releases/mayoral/london-hits-electric-vehicle-charging-points-miles>
- Municipal Strategy for Urban Distribution of Goods (DUM). Strategy to halve emissions from delivery vehicles | Info Barcelona | Barcelona City Council. (2023). Retrieved March 9, 2023, from [https://www.barcelona.cat/infobarcelona/en/tema/mobility-and-transport/strategy-to-halve-emissions-from-delivery-vehicles\\_1257063.html](https://www.barcelona.cat/infobarcelona/en/tema/mobility-and-transport/strategy-to-halve-emissions-from-delivery-vehicles_1257063.html)
- A new EV horizon: Insights from Shenzhen’s path to global leadership in electric logistics vehicles. C40 Knowledge Community. (2019). Retrieved March 14, 2023, from [https://www.c40knowledgehub.org/s/article/A-new-EV-horizon-Insights-from-Shenzhens-path-to-global-leadership-in-electric-logistics-vehicles?language=en\\_US](https://www.c40knowledgehub.org/s/article/A-new-EV-horizon-Insights-from-Shenzhens-path-to-global-leadership-in-electric-logistics-vehicles?language=en_US)
- Paquier, J. (2022, June 10). Paris expérimente avec Sogaris Deux micro-hubs Logistiques. *Le journal du Grand Paris - L'actualité du développement de l'Ile-de-France*. Retrieved March 9, 2023, from <https://www.lejournaldugrandparis.fr/paris-experimente-avec-sogaris-deux-micro-hubs-logistiques/>
- PIEK. Piek. (2023). Retrieved March 9, 2023, from <https://www.piek-international.com/>
- Roadmap ZECL: Moving towards Zero Emission City Logistics in Rotterdam in 2025. C40 Knowledge Community. (2019). Retrieved March 9, 2023, from [https://www.c40knowledgehub.org/s/article/Roadmap-ZECL-Moving-towards-Zero-Emission-City-Logistics-in-Rotterdam-in-2025?language=en\\_US](https://www.c40knowledgehub.org/s/article/Roadmap-ZECL-Moving-towards-Zero-Emission-City-Logistics-in-Rotterdam-in-2025?language=en_US)
- Urban Freight Lab: Supply Chain Transportation and Logistics Center at the University of Washington. Urban Freight Lab | Supply Chain Transportation and Logistics Center at the University of Washington. (2023). Retrieved March 9, 2023, from <https://depts.washington.edu/sctlctr/urban-freight-lab>