Freight and logistics: Case studies from cities in the Global South and beyond



MobiliseYourCity

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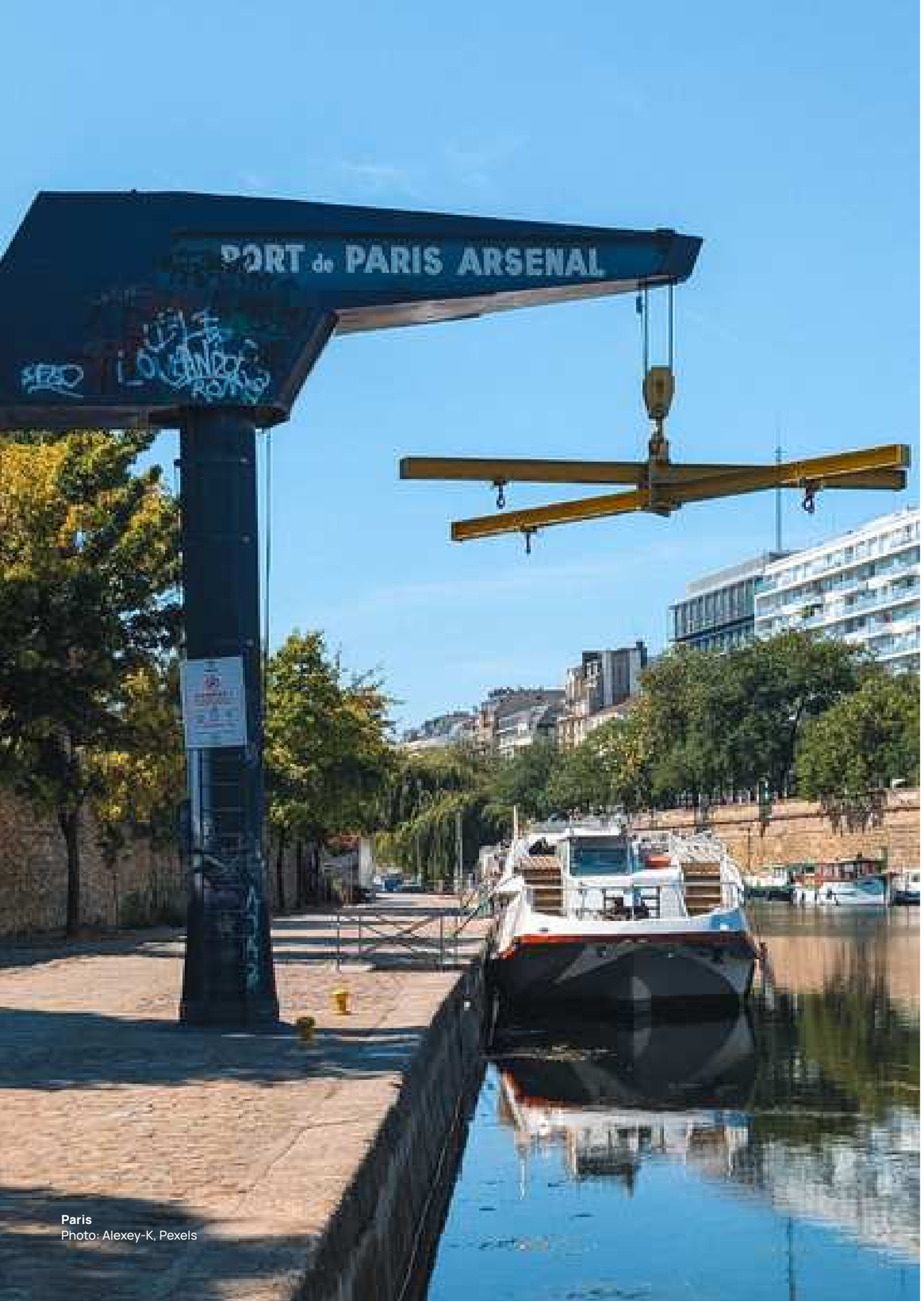

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About this *publication*

This publication brings together **13 Case studies of urban freight and logistics initiatives**, focusing on experiences from or applicable to cities in the Global South. Drawing on initiatives led by public authorities and private actors, it shares practical experiences and lessons to support integrating freight and logistics into urban mobility planning.

Each case study examines its respective context, exploring the challenges that prompted action, the approaches adopted and the conditions that shaped implementation. The analysis considers governance frameworks, funding mechanisms, delivery partners and enabling conditions, alongside implementation challenges, outcomes and benefits.

The experiences examined illustrate different approaches to urban freight and logistics management across governance and regulation, planning frameworks, infrastructure and urban space, vehicle technology and digital solutions, decarbonisation, partnerships and sector development.



Location of Case studies about urban logistics

Figure 1 **Location and topics of Case studies**

	Cities	Title of case study	Topic	Chapter
Latin America	**Medellín**, Colombia	Urban freight data collection	Data	Preparation and analysis
	Sao Paulo, Brazil	Off-hour deliveries	Regulation	Access and circulation rules
	Lima, Peru	Wholesale market relocation	Planning	Work towards inclusive employment
Middle East	**Abu Dhabi,** UAE	Structuring the new sector of platform deliveries	Labor conditions	Improve labour conditions
Africa	**Lomé,** Togo	Investing in freight infrastructures in gateway cities	Infrastructure Development	Strategy development
	Kigali, Rwanda	Building a Logistics Gateway through Progressive and Coordinated Infrastructure Development	Planning	Implementation and monitoring
Asia	**Ahmedabad,** India	Sustainable urban logistics plans	Planning	How to articulate SUMP and SULP?
	Klang Valley (Malaysia)	Consolidating freight and passenger transport	innovation and research	Optimizing flows
	Thailand	Optimizing construction logistics in Thailand	Planning frameworks / Construction logistics	Optimizing flows
North America	**New York City,** USA	Setting up a municipal freight unit	Governance	Preparation and analysis
Europe	**Paris,** France	Logistics land use in a municipal zoning ordinance	Planning	Strategy development
	Rotterdam, The Netherlands	Decarbonizing urban logistics	Fleet Renewal / Climate Mitigation	Support vehicle transition through incentives and phased regulation
	Barcelona, Spain	Innovative curb management for loading/unloading	Curb management	Design delivery space

The findings from these case studies form the basis for the MobiliseYourCity Topic Guide Integrating Freight and Logistics into Urban Mobility Planning in the Global South. The guide draws on this analysis to support implementing partners and urban mobility practitioners in integrating freight and logistics throughout the development and implementation of SUMPs and NUMPs, including selecting measures for their action plans.

1

Medellín, Colombia *Urban freight data collection*



Medellín, Colombia
Photo: Geralt, Pixabay

Addressing the urban freight data gap through metropolitan planning

The Medellín Metropolitan Area illustrates how dedicated freight surveys can help public authorities address the lack of reliable information on urban goods movements. The Área Metropolitana del Valle de Aburrá (AMVA) covers Medellín and nine surrounding municipalities, where freight activities extend across administrative boundaries and share a constrained transport corridor along the valley. These conditions called for a metropolitan approach to freight data collection and planning (González-Calderón et al., 2018).

In 2011–2012, AMVA and the Municipality of Medellín funded a comprehensive freight survey, conducted by the Universidad Nacional de Colombia with international research support. The study combined surveys of commercial vehicles, establishments and transport operators to capture both goods flows and the vehicle movements they generate. It aimed to provide a reliable basis for understanding freight demand, identifying operational constraints and informing transport planning (González-Calderón et al., 2018).

The initial study laid the groundwork for a broader planning approach. In 2017, the metropolitan authorities launched a follow-up initiative to update freight origin–destination patterns, investigate previously underrepresented activities and identify potential policy measures. This progression illustrates how an initial diagnostic can strengthen institutional interest in urban freight and support more systematic metropolitan planning (González-Calderón et al., 2018).

Strengths and Limitations of Recent Data Collection Campaigns

Combining complementary survey methods

The 2011–2012 study adopted a multi-layer data collection approach, combining three complementary instruments (González-Calderón et al., 2018):

01

Commercial vehicle cordon surveys

2,950 vehicles were surveyed at 11 toll stations, representing approximately 17% of incoming commercial vehicle traffic. The surveys documented origins and destinations, vehicle characteristics, commodities, loads and delivery rounds, providing an overview of freight movements entering and leaving the metropolitan area.

02

Establishment surveys

2,947 establishments, representing 4.4% of businesses in the study area, were surveyed across the ten municipalities and 20 economic sectors. The data covered incoming and outgoing goods, delivery frequency, vehicle types, storage facilities and loading conditions. Expansion factors were applied to estimate freight activity across the metropolitan economy.

03

Carrier and driver interviews

Interviews with ten transport companies and 130 drivers complemented the other surveys by documenting delivery tours, operational practices and relationships between suppliers, carriers and receivers.

By combining these sources, the study captured both freight demand at establishments and the vehicle movements generated by logistics activities. It also provided insights into small-scale urban distribution: the establishment survey covered many micro and small businesses, while the vehicle surveys included different categories of commercial vehicles.

Building a metropolitan evidence base

The surveys provided a detailed picture of freight movements within the metropolitan area. They estimated approximately 33,274 tonnes of goods entering the area and 35,240 tonnes leaving it each day. The study also highlighted the importance of smaller urban deliveries, identifying approximately 94,000 daily freight trips generated or attracted by small establishments, compared with around 17,000 daily commercial vehicle trips recorded through the external cordon analysis (González-Calderón et al., 2018).

The findings demonstrated the importance of distinguishing freight volumes from vehicle movements when planning urban logistics. They also provided evidence on delivery frequency, vehicle types and loading practices, including the extensive use of on-street space for loading and unloading.

In 2017, the metropolitan authorities initiated an expanded study covering updated freight origin–destination patterns, large freight generators and service trips. The objective was to address gaps in the initial diagnostic and develop recommendations for freight transport policies (González-Calderón et al., 2018).

Addressing representativeness and data collection constraints

Despite its comprehensive approach, the Medellín experience highlights several challenges associated with dedicated urban freight surveys:

- **Temporal coverage.** The initial cordon surveys were conducted between 06:00 and 19:00, excluding night-time freight movements. The surveys also provided a snapshot of activity rather than continuous monitoring, limiting their ability to capture seasonal variations and changes in delivery practices.
- **Incomplete coverage of freight activities.** The established sample excluded some large businesses because sampling information was insufficient. Informal and unregistered operators may also have been underrepresented. These gaps are particularly relevant for freight planning, as a relatively small number of large generators can account for substantial goods volumes. In contrast, numerous small operators can generate intensive vehicle activity.
- **Reliance on self-reported information.** Delivery frequencies, shipment characteristics and operational practices were partly based on responses from businesses and drivers. These may be affected by recall errors, incomplete records or reluctance to disclose commercially sensitive information.
- **Participation and representativeness.** The surveys benefited from cooperation among drivers and establishments, but participation among transport companies was more challenging. Subsequent data collection activities similarly showed contrasting levels of engagement, with strong participation in some driver and loading observations but greater reluctance among transport companies to share operational information. Voluntary participation can introduce selection bias when more cooperative or better-organised operators are overrepresented.

Some of these limitations also apply to household mobility surveys, particularly sampling bias, recall errors and the costs of repeated data collection. However, freight surveys face additional challenges linked to the diversity of economic activities, the absence of comprehensive operator registers, commercially sensitive information and the difficulty of connecting shipments, delivery rounds and vehicle trips (Allen, Browne and Cherrett, 2012).

Data accessibility and continuity

Data accessibility represents a further limitation. The Medellín freight studies generated valuable information for research and planning, but the underlying freight microdata do not appear to be systematically disseminated through the metropolitan open-data portal.

By comparison, passenger origin–destination surveys form part of a more established monitoring framework. The metropolitan authority has published household and travel datasets from the 2017 survey and subsequently conducted a new origin–destination survey in 2025. Freight data collection appears to have followed a less regular, project-based approach (AMVA, 2023; AMVA, 2026).

This difference highlights the challenge of moving from occasional freight diagnostics towards a regularly updated and accessible data system. Limited access to detailed data also constrains independent analysis, cross-period comparisons and the reuse of survey results for planning.

Towards a more hybrid approach: combining regular administrative reporting and field-based data collection

Freight remains on the planning agenda, but without a fixed survey cycle.

Urban freight remains explicitly embedded in Medellín's current planning framework The 2024–2027 District Development Plan maintains freight and logistics within Medellín's mobility planning framework, notably through the Transporte de carga y logística para Medellín programme and its alignment with metropolitan mobility objectives (Alcaldía de Medellín, 2024). At the municipal level, freight-related responsibilities fall under the Secretaría de Movilidad, whose organisational structure includes a Unidad de Transporte, a Unidad de Planeación y Prospectiva and a Unidad de Gestión Estratégica Vial y Logística. However, no publicly available organisational documents show an exclusively dedicated urban freight unit. Freight planning is therefore embedded within broader mobility and logistics responsibilities, alongside metropolitan coordination through the Área Metropolitana del Valle de Aburrá (Alcaldía de Medellín, 2025). At the metropolitan level, the Master Mobility Plan for the Aburrá Valley sets objectives to improve freight efficiency, strengthen connections with strategic logistics infrastructure, reduce freight-related environmental impacts, and reinforce coordination among public authorities, businesses, and logistics stakeholders (AMVA, 2020). However, neither document establishes a fixed cycle for repeating comprehensive freight surveys comparable to the 2011–2012 and 2017–2018 exercises. This contrasts with passenger mobility, for which origin–destination surveys are more firmly embedded in metropolitan monitoring practices. The current framework therefore confirms continued institutional attention to freight, but not yet a formalised programme of recurrent metropolitan freight surveys.

Regular company reporting, but no permanent operational data-sharing framework

Since 2019, the Área Metropolitana del Valle de Aburrá (AMVA) has complemented occasional freight surveys with a regular administrative reporting mechanism through the Registro Metropolitano de Transporte de Carga. Established under Metropolitan Resolution No. 901 of 2019, the register requires medium-sized and large companies operating, commissioning or subcontracting freight transport within the metropolitan area to report information through a dedicated digital platform. This includes the types of goods transported, main origin–destination routes, owned and subcontracted fleets, vehicle characteristics, mileage, energy consumption and measures to reduce fuel use and emissions. Companies must update their fleet information every two years, during the third quarter of odd-numbered years (AMVA, 2019).

The reporting obligation is grounded in AMVA's mandate as an urban environmental authority, notably under Colombian Laws 99 of 1993 and 1625 of 2013. Resolution No. 901 of 2019 requires companies to submit accurate, verifiable information and explicitly provides for environmental sanctions for non-compliance, referring to Articles 5 and 40 of Law 1333 of 2009. However, publicly available evidence does not establish the level of company compliance, the frequency of inspections or the effective application of sanctions.

The register therefore represents a step towards institutionalising freight data collection, but it is not equivalent to a continuous public–private operational data-sharing system. Reported routes refer to origin–destination information rather than continuous GPS tracking. The system does not provide systematic records of individual deliveries, vehicle stops, loading times or real-time movements. Its coverage is also limited to medium-sized and large companies, leaving many small and informal operators outside the reporting requirement.

The approach remains complementary rather than comprehensive: administrative reporting provides periodically updated information on formal freight activities and vehicle fleets. In contrast, field surveys remain necessary to assess delivery practices, curbside demand and operators outside the registry. Its effectiveness ultimately depends on institutional capacity to verify submissions, secure company participation and manage commercially sensitive information. The lack of publicly available compliance indicators remains a key limitation when assessing its operational performance.

Multi-Stakeholder arrangement

Involved entities

The following arrangements relate primarily to the 2011–2012 freight surveys, with subsequent developments linked to the 2017 metropolitan freight study, the 2019 reporting framework and the EcoLogistics programme.

01

Metropolitan and municipal authorities.
The initial surveys were jointly funded by the Área Metropolitana del Valle de Aburrá (AMVA) and the Municipality of Medellín. AMVA provided an appropriate metropolitan framework, as freight movements extend across municipal boundaries. It subsequently played a central role in developing freight-related studies and administrative reporting requirements (González-Calderón et al., 2018; AMVA, 2019).

02

Academic and technical partners.
The Universidad Nacional de Colombia, Medellín campus, conducted the 2011–2012 surveys, with technical advice from the VREF Centre of Excellence for Sustainable Urban Freight Systems at Rensselaer Polytechnic Institute. This collaboration combined local knowledge, survey design capacity and international freight-planning expertise (González-Calderón et al., 2018).

03

Enforcement bodies.
Highway police supported roadside interviews and commercial vehicle surveys, facilitating access to drivers and ensuring appropriate conditions for data collection. Their role was primarily operational and should be distinguished from AMVA's subsequent regulatory and enforcement responsibilities.

04

Private-sector stakeholders.
Freight companies, drivers, suppliers and receivers contributed information on goods movements, delivery patterns and operating conditions. Their participation was essential, as private actors hold much of the information needed for freight planning. However, uneven participation among transport companies highlighted challenges related to representativeness and commercial confidentiality.

05

Regional logistics coordination platform.
The Alianza Logística Regional Antioquia Líder brings together public authorities, freight-sector associations and universities to promote regional logistics efficiency, institutional coordination and policy development. Established within Colombia's national framework for Regional Logistics Alliances, it operates as a multi-stakeholder coordination platform rather than a dedicated public authority. The Ministry of Transport provides technical and methodological support, while participating organisations contribute to its activities. Publicly available information does not establish a dedicated permanent budget or financing mechanism. The alliance has supported dialogue on freight infrastructure and operational improvements, including proposals concerning the Aburrá River multimodal corridor (Ministerio de Transporte, 2018; ICLEI, 2021).

Institutional requirements for effective freight data collection

The Medellín experience highlights five requirements for establishing and sustaining an urban freight data system:

01

A metropolitan lead institution.
A clearly mandated public authority is needed to coordinate municipalities, define data requirements and ensure that findings inform planning and regulation. Metropolitan coordination is particularly important where freight movements extend beyond municipal boundaries.

02

Independent technical capacity.
Universities and research institutions can support survey design, sampling, data validation and analysis. Their involvement can improve methodological consistency and strengthen confidence in the results.

03

A stable interface with the private sector.
Regular engagement with freight operators, shippers and receivers is needed to secure participation and address confidentiality concerns. Clear communication on the benefits of data collection, including improved loading conditions and more predictable regulations, can help build trust.

04

Regulatory and enforcement capacity.
Where reporting is mandatory, authorities need a clear legal mandate, sufficient administrative resources and procedures to verify submissions and address non-compliance. Medellín's 2019 freight register established a formal reporting obligation, but available evidence does not establish compliance rates or the effectiveness of enforcement.

05

Clear data governance and reporting protocols.
Sustainable data collection requires standardised definitions and reporting requirements, including what information is collected, reporting frequency, submission procedures, data storage, access rights, and confidentiality safeguards. Such arrangements are particularly important when combining periodic surveys with administrative reporting. Medellín's freight register provides a basis for regular reporting, although it does not constitute a continuous operational data-sharing system.

Together, these conditions show that effective urban freight data collection depends not only on technical survey capacity, but also on sustained institutional coordination, private-sector participation, and the ability to maintain reliable, accessible information over time.

Key learnings

The Medellín case points towards a more hybrid monitoring model. Comprehensive surveys are useful for establishing representative baselines and identifying structural patterns, but they are costly and cannot be repeated continuously. Medellín has progressively complemented survey-based approaches with more regular administrative reporting from medium-sized and large companies. This can improve continuity between major survey rounds, but it does not provide a complete picture of deliveries.

Establishment surveys, roadside interviews, carrier surveys, traffic counts and digital traces each capture different dimensions of freight activity and carry specific biases. Used together, they provide a more reliable picture of freight demand, vehicle movements and operational practices.

Data collection should be driven by clearly identified planning needs. The geographic scope should also reflect the functional logistics system rather than administrative boundaries. A metropolitan coordinating body can therefore help reduce institutional fragmentation and harmonise data collection across jurisdictions.

Indicators



Other cases

Geography	Main relevance
Changsha China	Changsha illustrates how public incentives can facilitate private-sector participation in freight data sharing. Under its Green Urban Freight Distribution programme, launched in 2018, the city selected pilot freight companies and connected their information systems to a publicly funded monitoring platform. This enabled the transmission of operational information, including vehicle and GPS-related data, to support programme monitoring, performance assessment, and subsidy administration. Participating operators could benefit from financial support, preferential road access for eligible vehicles, reduced parking charges and charging infrastructure development. The case nevertheless illustrates how linking data reporting to a broader package of operational and financial benefits can encourage private-sector engagement.
Dakar Senegal	CETUD's urban logistics study, conducted at least in part in 2021, combined institutional and stakeholder analysis with quantitative and qualitative freight-flow data. It linked data collection directly to a metropolitan action plan and to wider spatial, mobility, and logistics planning, including restructuring flows associated with Diamniadio and planned port and logistics infrastructure. The case shows the value of treating freight data collection as part of a broader governance, infrastructure and capacity diagnostic rather than as a stand-alone survey exercise (CETUD, n.d.).
Lagos Nigeria	Freight studies combined roadside observations at major bottlenecks with driver questionnaires covering vehicle characteristics, trip origins and destinations, and surrounding land uses. Freight-demand estimates have also informed assessments of truck parking and port access. The case illustrates the relevance of targeted field surveys where digital fleet data remains limited, while highlighting the need to consolidate fragmented studies into a common metropolitan data observatory (Atomode, 2021; LAMATA, 2025).
Kerala India	Establishment-based freight surveys across seven cities were used to develop freight-generation models using relatively simple variables such as employment, gross floor area and years in business. The case shows that data-constrained contexts can still produce useful demand estimates. However, it also highlights non-response as a structural source of bias, particularly among establishments handling commercially sensitive or high-value goods. Sampling, weighting and respondent-engagement strategies should therefore explicitly address systematic non-participation (Pani et al., 2018; Pani & Sahu, 2022).



Medellín, Colombia
Photo: Julianza, Pixabay

2

São Paulo, Brazil
Off-hour deliveries

São Paulo, Brazil: Off-hour deliveries



São Paulo, Brazi
Photo: Gabriel Ramos, Unsplash

A pilot project aimed at reducing logistics externalities during peak periods

Off-hour deliveries (OHD) can improve freight efficiency in highly congested cities by shifting deliveries away from peak periods. For logistics operators, this generally means higher travel speeds, more reliable journeys and easier access to loading areas. For public authorities, it can reduce conflicts between freight and general traffic without requiring additional road capacity.

In São Paulo, interest in OHD emerged amid long-standing truck access restrictions within the Zona de Máxima Restrição de Circulação (ZMRC), which covers approximately 100 km² in the enlarged centre. These restrictions were intended to limit daytime heavy-vehicle movements. However, a later exemption for small urban cargo vehicles (VUCs) allowed daytime deliveries to continue and encouraged replacing larger trucks with smaller vehicles. While this improved operational flexibility for receivers, it also increased delivery trips and traffic volumes, reducing the expected congestion benefits of the original regulatory framework.

Against this background, the municipality reassessed its approach to freight regulation in 2013 and explored whether OHD could offer a more efficient alternative. Drawing on the New York City experience, São Paulo launched a pilot programme to test nighttime deliveries within the ZMRC for 5-6 months, from October 2014 to March 2015.

Highly structured pilot project

Entities involved in the pilot project and scope of application

The project is primarily based on a public-private partnership involving numerous stakeholders:

- The pilot project was led operationally by the Department of Road Systems (DSV)—part of the São Paulo municipal transport authority—in partnership with CET (Companhia de Engenharia de Tráfego).
- The University of São Paulo (USP)—through the Systems Innovation CISLOG group—provided technical and scientific support, handled technical coordination and independent evaluation, and analysed the results.
- To ensure effective public-private collaboration, two intermediary organisations played a key role: SETCESP (the Union of Freight Transport Companies of São Paulo and Region), representing road freight transport companies in São Paulo, and the Instituto para Desenvolvimento do Varejo (IDV), representing major retail companies.
- The São Paulo State Police (Polícia Militar) were alerted to the project so that safety protocols could be established and night patrols adjusted. However, law enforcement forces cannot be requisitioned for private purposes.
- The companies that took part in the operational pilot were 11 large retail chains and delivery-generating establishments:
  - Grupo Pão de Açúcar and Sonda Supermercados in the **supermarket sector**;
  - Drogaria São Paulo and Droga Raia/Drogasil **in pharmacies**;
  - Grupo O Boticário in **health and beauty**;
  - Lojas Americanas and Lojas Renner in department **stores and apparel**;
  - Telhanorte in **construction materials**;
  - BFFC/Bob's in **fast food**;
  - FEMSA Coca-Cola in **beverages**;
  - Antilhas Embalagens in **packaging**.

These firms represented different delivery contexts, including street stores, shopping centres and home centres, allowing the pilot to test off-hours deliveries across several retail and logistics configurations.

How companies were incentivised to join the pilot

Companies were first sensitised through workshops and sector events. In July 2013, CISLOG/USP and CoE-SUFS organised an international urban logistics workshop in São Paulo, where the New York off-hours delivery pilot was presented, and local firms shared operational experience. In October 2013, SETCESP (the Union of Freight Transport Companies of São Paulo and Region) organised a dedicated event on night deliveries, **attended by around 200 carriers and shippers.**

The formal mobilisation then relied on a mixed public-private-academic task force, created in early 2014 by SMT/DSV/CET with SETCESP, IDV (the Institute for Retail Development) and CISLOG/USP. The approach was explicitly dialogue-based: the municipality did not impose a ready-made regulation but used the pilot to test the measure with companies under real operating conditions.

Companies were invited through business associations, especially IDV, which represented major retailers, and SETCESP, which represented freight transport operators.

There was also a specific project presentation event in August 2014 for interested firms. More than 100 professionals from around two dozen large companies reportedly attended; 15 companies initially volunteered, **and 11 ultimately took part in the operational pilot.**

Participation was voluntary and did not rely on dedicated public funding or financial incentives. It was implemented through in-kind contributions from the municipality, academia and private participants, with companies absorbing their own operational costs and the city providing coordination, technical staff and institutional support.

Localisation of the project

It was carried out in a defined area of the ZMRC of approximately 11 km² with mixed land use, including retail, services, light industry and residential functions. The selected area also presented a moderate security risk of theft, allowing the pilot to test nighttime deliveries under realistic urban conditions.

Key pre-identified issues

From the outset, the project focused on four operational issues: **noise, safety, traffic conditions, and the productivity and cost implications** of nighttime deliveries. Noise was identified as the main operational concern. At night, routine delivery activities such as unloading, door handling and pallet movements became far more noticeable. Mitigation measures therefore combined staff training, adapted handling practices, and basic equipment adjustments to reduce noise at delivery points.

Security was the second major issue, given São Paulo's exposure to cargo theft. To reduce risk, companies shared delivery locations and time windows in advance with the State Military Police, excluded high-value goods from the pilot, and relied on their own monitoring and protection systems where needed. Some companies also hired armed escorts for assisted deliveries, which increased costs but added a layer of protection. No significant security incidents were reported during the trial.

Evaluation of the project

The evaluation was led technically by CISLOG/USP, with CET support. The São Paulo pilot used a mixed-methods approach combining field observation, technical measurements, and stakeholder feedback. Quantitative methods included direct monitoring of more than 60 day and night deliveries/routes over 12 weeks, representing around 1,200 person-hours of fieldwork.

Quantitative methods included direct monitoring of noise, security, traffic, and truck speeds, as well as delivery costs and productivity, complemented by quality data from interviews with drivers, store employees, and logistics managers. These interviews assessed perceived safety, working conditions, night-shift constraints, staff availability, and the acceptability of night deliveries. The evaluation also used external records, including police/security information and noise complaint data, to check whether incidents or formal complaints occurred during the pilot.

Some results and limitations

Although participating companies did not share full cost data, they provided delivery information and GPS traces that allowed CISLOG to estimate relative productivity gains. The results showed higher vehicle speeds, shorter service times and improved vehicle productivity. The main limiting factor was not transportation performance, **but receiver-side costs such as higher wages**, as nighttime deliveries required staff to be present outside normal working hours. This requirement remained a key issue in evaluating whether the systematic use of off-hour deliveries could be sustained after the pilot.

Multi-stakeholder arrangement

The São Paulo pilot was built on a clearly **multi-actor arrangement that combined public leadership, private sector mobilisation and academic oversight.** The municipality provided the regulatory framework and coordinated the operational conditions required for the pilot, including links with departments responsible for lighting, curb management, noise control and public space management. The State Military Police played a complementary role by integrating delivery locations into patrol planning.

Private stakeholders were central to the pilot's implementation. SETCESP supported the initiative from the perspective of freight operators, while IDV helped mobilise major retailers and secure participation from receivers. Participating companies tested the operational model, adjusted delivery procedures and, where necessary, deployed their own security measures. The University of Sao Paulo played a particularly important role as a neutral and credible third party. Its involvement helped build trust between the municipality and private operators, ensured methodological rigour, and produced the evidence base needed to assess the pilot's results. This combination of public coordination, private operational engagement and academic intermediation was one of the main enabling factors behind the project.

Key learnings

The São Paulo experience shows that OHD can deliver clear operational benefits in a congested urban context, but that **technical feasibility alone does not guarantee scale-up.** The main condition for long-term uptake lies on the receiver side. While carriers benefited from faster trips and higher productivity, receivers had to absorb the additional cost of nighttime staffing. This uneven distribution of costs and benefits limited the model's long-term appeal, especially for non-integrated retailers.

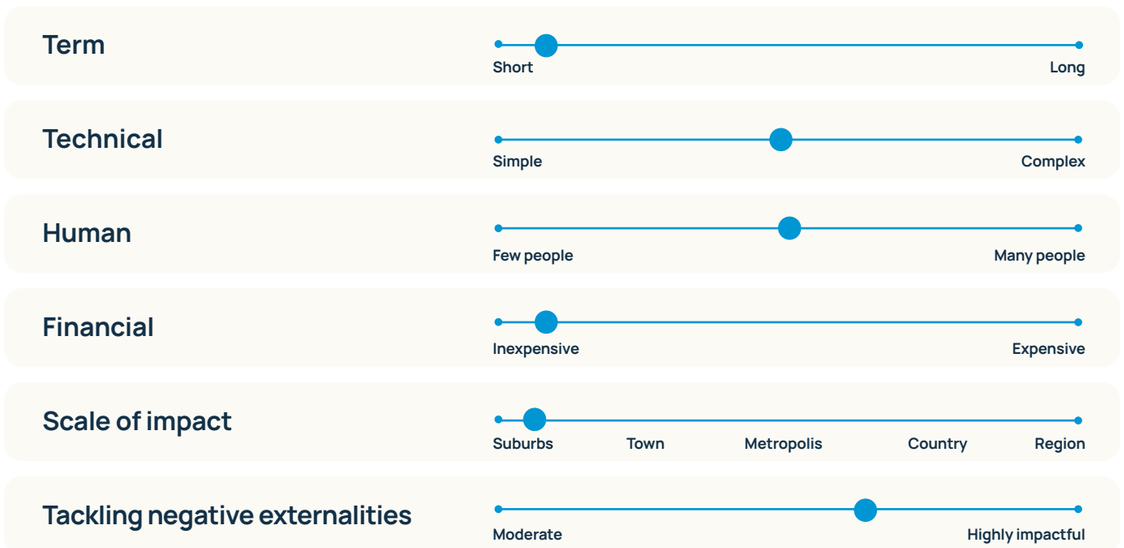
Unattended deliveries can significantly reduce receiver-side labour costs by removing the need for staff to be present at delivery. This was one of the key reasons why such arrangements proved more durable in New York. However, they require specific conditions that are not easy to replicate. Goods must be left in a dedicated intermediate storage area, which implies additional floor space and secure arrangements to prevent theft or damage. In dense urban contexts, space costs can be a major constraint. These systems also rely on a high level of trust, as carriers may need access to the premises without any staff present to check the delivery.

The pilot also showed that **the main operational risks associated with nighttime deliveries can be managed.** Noise proved to be a critical issue, but it was reduced through training, behavioural adjustments and low-cost technical measures. The team addressed security concerns through coordination with public authorities, excluding high-risk goods and using private monitoring tools. The absence of major incidents during the pilot suggests these risks can be contained if addressed early in the design phase.

A further lesson concerns governance. OHD requires coordination beyond the transport department, as implementation depends on traffic management, public space regulation, policing, and the active participation of private operators. In São Paulo, **a trusted academic partner helped align public and private stakeholders. It turned the pilot into a structured learning process rather than a simple operational trial.**

More broadly, the case suggests that OHD is most likely to be sustained where receiver constraints are limited, for example in establishments operating late, open 24/7, or able to organise unassisted deliveries. Where this is not the case, incentives or support mechanisms may be needed to make the model viable beyond the pilot stage.

Indicators



Other cases

Geography	Main relevance
Bogotá Colombia	Bogotá is the most relevant Global South comparison to São Paulo. The city implemented a night loading and unloading pilot with 17 companies between 2015 and 2016, supported by a public–private alliance involving mobility and economic development authorities, business stakeholders and academic support. The case is useful because it confirms several São Paulo findings: off-hour deliveries can reduce travel times and logistics costs, but wider adoption depends on receiver acceptance, security conditions, night labour arrangements and the ability to coordinate shippers, carriers and receivers.
Barcelona Spain	Barcelona provides a useful European reference for the transition from experimentation to a more enabling regulatory framework. The city has tested nighttime deliveries and later simplified authorisations for night unloading, subject to noise-control requirements. The case is relevant because it shows how OHD can be supported through regulatory facilitation, acoustic standards and operational conditions that protect residents while allowing freight activity to shift away from congested daytime periods.
New York City United States	New York City provides the main reference case for São Paulo's pilot. Its OHD programme showed that nighttime deliveries can be maintained beyond the pilot phase with strong stakeholder coordination and targeted incentives for receivers, including start-up subsidies to cover initial costs, shared logistics cost reductions, secure access without on-site staff, and regulatory or commercial recognition such as trusted or quiet delivery schemes. It also highlighted a key distinction between staffed and unassisted deliveries: where receivers did not face significant additional labour costs, long-term adoption was far more likely. This experience reinforces one of the main findings from São Paulo: OHD success depends less on operational performance than on receiver-side acceptance and on how the incremental costs and benefits of night deliveries are shared among receivers, carriers, shippers and, where relevant, public authorities.



Santa Anita, Peru
Photo: LaRepublica.pe

3

Lima, Peru
Wholesale market relocation

The move from La Parada to Santa Anita

In several countries of the Global South, tensions are growing between major cities seeking to relocate or consolidate their wholesalers on the urban periphery, within agro-logistics hubs better connected to major transport routes, and small and medium-sized towns, where markets often remain embedded within the central or peri-central urban fabric, because they play a key role in food accessibility and local commerce. However, this is not a strict dichotomy, but a continuum that depends on volumes handled, pressure on land, congestion, institutional capacity, and the market's social role.

Why relocate a wholesale market?

Wholesale markets are major sources of freight: hubs for incoming lorries, unloading operations, and the movement of porters, small vehicles, mobile vendors, and professional buyers. When they are located within highly dense central urban areas, they create a complex interplay between stakeholders with very different needs: wholesalers, hauliers, retailers, informal traders, private customers and residents, including potentially vulnerable groups such as children, older people or those with reduced mobility. This mix of uses is also accompanied by a wide variety of modes of transport—heavy goods vehicles, light commercial vehicles, motorised two-wheelers, bicycles, carts, and pedestrians—which often share limited and poorly regulated public space. This can lead to major conflicts of use: congestion, unauthorised parking, road obstruction, unsanitary conditions, safety risks, handling difficulties, and deteriorating working conditions.

Historical context of La Parada market and characteristics of the Santa Anita new market

La Parada was historically Lima's main wholesale food market. Situated at the junction of major roads, the site served as a hub for lorries carrying agricultural produce and as a centre of activity for traders, porters, street vendors and retailers. The market gradually became more densely populated from the 1960s onwards, against a backdrop of internal migration and Lima's rapid expansion. In the case of La Parada, stakeholders acknowledged that the site had become too small, difficult for lorries to access, unsafe, very crowded, and difficult to keep clean. The new Santa Anita market has become the capital's main supply centre. Available operational data indicate that it currently handles around 6,000 to 8,000 tonnes of goods per day, with approximately 700 lorries arriving on a typical day. The site employs around 3,000 workers, plus nearly 200 administrative staff. It features loading bays, buildings organised by product type, sanitary facilities, and entry control systems.

Objectives of the move from La Parada to Santa Anita

6 interlinked objectives therefore drove the move to Santa Anita in 2012:

01

Addressing congestion, insecurity and poor sanitary conditions.
The former La Parada market had become overcrowded, difficult to manage and increasingly incompatible with its dense urban surroundings.

02

Modernising Lima's wholesale food distribution system.
The relocation aimed to transfer wholesale activities to a more organised, controlled and purpose-built facility, better suited to the handling and distribution of perishable agricultural products.

03

Improving logistics operations.
Santa Anita was expected to provide better truck access, more structured unloading areas, improved internal circulation and greater capacity to manage large daily flows of food products.

04

Strengthening public control and formalisation.
The new market made it easier for public authorities to regulate access, allocate stalls, collect fees, control vehicle movements and reduce informal practices associated with the former market.

05

Reducing informal costs and improving market efficiency.
The relocation was expected to reduce informal transaction costs, losses and operational inefficiencies.

06

Recovering and requalifying urban space.
The closure of La Parada was also linked to the recovery of a highly contested central area as part of a broader urban requalification agenda

A stand-alone project

The relocation of wholesale markets is often carried out as infrastructure and land-use reorganisation projects: closing or restricting the old site, transferring wholesalers to a newly planned market, introducing new tenancy agreements, improving access for heavy goods vehicles, and strengthening institutional oversight. In Lima, the relocation was part of a drive to formalise and modernise wholesale trade, with Santa Anita presented as a closed, regulated, and more easily manageable market.

The relocation of La Parada to Santa Anita was not implemented as a fully integrated, comprehensive urban plan. It was primarily a long-standing project to reorganise Lima's wholesale food distribution system, later linked to a broader municipal agenda of urban regeneration, control of public spaces, and market modernisation.

Consequence: the fragmentation of Lima's logistics ecosystem

Benefits for vendors of the new market and for the public authorities

The case of Lima shows that relocating a wholesale market can yield significant gains in internal organisation, particularly in capacity, security, health checks, and lorry management. Santa Anita has enabled the creation of a more modern facility, capable of handling very large volumes, with reduced unloading times and improved capacity for controlling entries. Unloading time, estimated at around 20 hours at the old market, is said to have been reduced to around a tenth at the new site, thanks to spaces better suited to lorries.

For the public authorities, relocating La Parada to Santa Anita has also strengthened their ability to regulate and exercise economic control over the food wholesale trade. By transferring operations to an enclosed market managed by a municipal company, the local authority has been able to regulate occupancy rights, rents, services, vehicle entry and exit, and weighing and collection procedures more effectively. However, the available sources do not allow precise quantification of any fiscal gains in VAT, tax, or social security contributions.

Limitations: the redistribution of costs

The relocation was expected to reduce informal transaction costs, losses and operational inefficiencies, while improving transparency and competition within the wholesale food supply chain. However, Escobal and Armas's economic analysis shows that the move had only a limited impact on the cost structure and level of competition within the potato supply chain (Escobal & Armas, 2018). In this sense, relocation also constitutes a choice regarding the allocation of costs – **almost a political trade-off** – as it affects wholesalers, transport operators, small traders, mobile vendors and end customers differently.

In Lima, the move to Santa Anita improved the central market's operational efficiency, but it also lengthened the journeys of many small traders who had previously relied on La Parada. Some sellers of perishable goods now have to travel to Santa Anita at night or before dawn to stock up, with journeys of up to 150 km there and back in metropolitan traffic congestion. This change has lengthened working days, increased transport costs and exposed some traders to riskier night-time journeys (WIEGO, 2018). Analysing costs by stakeholder category therefore appears to be a key, indeed, essential, element of the planning process prior to any market relocation: it makes it possible to identify potential winners and losers, to plan for supporting measures, and to ensure that an overall gain in efficiency does not result in a disproportionate shift of the burden onto the most vulnerable operators.

The relocation of informal activities

At the time of the relocation, more than 2,000 street vendors were working in the area, but the new market accepted only 640, resulting in a selection process.
Some informal street vendors at La Parada, particularly younger vendors organised into associations, saw the relocation to an adjacent site in Santa Anita as an opportunity to formalise their business, gaining access to recognised self-employed status, secure trading rights, **and integration into a regulated market system.** Around 32 associations, representing nearly 1,700 vendors, were interested in this option.

The opportunity for relocation was partially realised in 2020 with the transfer of several thousand street vendors from La Parada to the temporary Tierra Prometida market in Santa Anita. This operation provided some vendors with a more recognised, organised, and regulated trading space. However, it does not appear to have fully formalised and stabilised the situation for all informal vendors. The process has remained selective, contentious, and incomplete, with vendors still operating at La Parada and persistent tensions over access, occupancy rights, and economic conditions.

The persistence of the informal system in La Parada

Wholesalers operating within the new market have benefited from a better-organised site, improved unloading areas and more formalised management of goods flows. However, the Santa Anita market has not replaced the commercial activities at La Parada, **which has remained a major hub of informal trade following the relocation.** Some street vendors and small traders still rely on the old neighbourhood to sell their goods and now have to source stock from Santa Anita before returning to their local markets or informal trading areas. Furthermore, lorries continued to arrive at La Parada at night, and street trading began as early as 3 am, indicating that the informal supply chain has reorganised itself around increased temporal and spatial constraints rather than disappearing (Coletto, Jaber and Vanhellemont, 2021).

The new dual system

The relocation has therefore created a dual system. On the one hand, Santa Anita operates as a formal market, which is better regulated and more efficient for wholesale operations. On the other hand, La Parada remains an informal sales hub, partly fed by flows from the new market. This duality limits the expected modernisation effect: the logistical hub has moved, but parts of the local economy and distribution practices remain tied to the old site. Those involved in the new market have benefited from a better-equipped environment, but conversely, sellers who have remained at La Parada – particularly street vendors and semi-wholesalers not integrated into the new system – have seen their working conditions deteriorate. This case study reminds us that formalising urban logistics systems must carefully assess informal dynamics and build comprehensive mechanisms to integrate them into the process.

Figure 2 **Relocating a large freight generator**

What changes when a wholesale market moves



- Central location
- High accessibility for small retailers Mixed professional and public uses
- Severe congestion and informal occupation
- Poor unloading and circulation conditions

- Peripheral and purpose-built site
- Better truck access and unloading conditions
- More controlled and formalised operations
- Improved site efficiency
- Longer access trips for some small operators

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Institutional mechanisms to promote greater acceptance

Merchant acceptance

Acceptance of the move was mixed and conflict-ridden. Many traders recognised the need for change, but uncertainty remained about the details: who would be relocated, under what conditions, how the new market would operate, how goods would be transported, and what would become of the businesses remaining at La Parada.

Some traders feared a drop in sales whilst customers adjusted to the changes. Others doubted that shoppers would make the journey to Santa Anita. **Street vendors and small retailers were particularly vulnerable**, as their livelihoods depended on wholesalers at La Parada. Finally, some stakeholders were losing informal income linked to the old system of occupying or subletting stalls.

Institutional mechanisms to promote greater acceptance

Acceptance of a market shift depends less on the technical suitability of the new site than on the quality of the institutional process. The necessary mechanisms are well established: early information, precise identification of those entitled to a stall (where possible, a guarantee that everyone will be allocated a space) with clear selection procedures, recognition of those who depend on the market but are not formally established there, inclusive transition plans and remediation measures, economic support, transport solutions for small-scale buyers, and mediation arrangements with traders' associations.

Street vendors do not form a homogeneous group: some seek formalisation, others prioritise continuity at the old site, and still others are developing hybrid strategies between La Parada and Santa Anita. Relocation policies must therefore differentiate between these profiles, rather than proposing a one-size-fits-all solution.

Treating street vendors and semi-wholesalers as a functional component of the supply system, rather than merely as a public order issue, leads to greater acceptance.

Key learnings

The relocation of a major freight hub should not be treated as a mere transfer of infrastructure. It constitutes a reform of the distribution system, which must integrate logistics engineering, the sector's economy, the inclusion of informal workers and ongoing governance, requiring continuous support to safeguard livelihoods and restore the market's competitiveness (Afdilla and Fatmala, 2026).

For decision-makers, the indicators to be monitored should cover four dimensions.

Logistical aspect: volumes handled, incoming lorries, unloading times, parking capacity, road access and the organisation of goods flows.

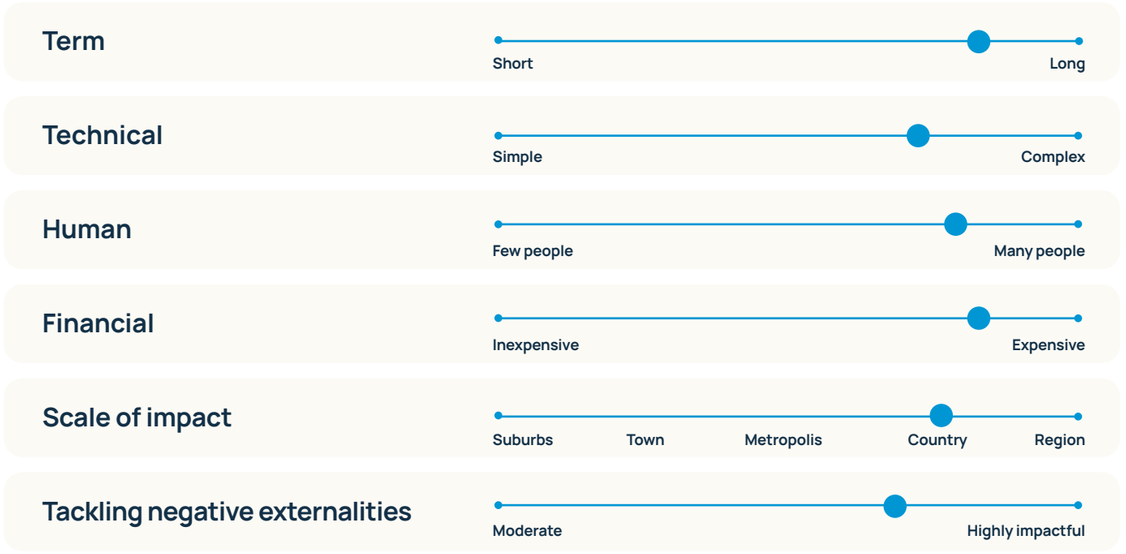
Economic aspect: margins, transaction costs, market power, wholesale prices and supply costs for retailers.

Social aspect: number of traders relocated, number of traders excluded, changes in income, working conditions and recognition of trade associations. Attention must be paid to traders who are unable or unwilling to take part in the relocation of the business, in order to preserve working conditions as close as possible to the original situation.

Formal/informal transition aspect: degree of integration of informal workers, recognition of street vendors and mobile traders, clarity of occupancy rights, affordability of access to the new site, and level of consultation with affected groups. This dimension is essential because relocation often changes the balance between formal and informal activities. Without prior consultation, negotiated rules and a progressive transition, formalisation can become selective and exclusionary, benefiting better-capitalised operators while weakening the most vulnerable actors.

There are numerous mechanisms that can be put in place to ensure a smoother transition: a flexible transition period, ongoing communication with traders, targeted economic support, promotion of the new site, clarification of occupancy rights, and enhanced coordination between the local authority and the market manager.

Indicators



Other cases

Geography	Main relevance
The Klithikan Notoharjo Market Indonesia	Another example from Indonesia, in Surakarta, shows that acceptance can improve through a more negotiated approach. The relocation of 989 street vendors to the Klithikan Notoharjo market is cited as a success thanks to a phased negotiation process (advance information, dialogue with vendors, information sessions). This was underpinned by financial assistance, mentoring, local political support, infrastructure preparation, recognition of usage rights, site promotion, and contingency planning (Warsono, Priyanto and Riyanto, 2016). Although this case does not concern a wholesale market, it offers valuable lessons for the institutional management of relocating informal traders.
The Rungis Market France	The relocation began in March 1969 and was completed in January 1973. The relocation was a response to problems that had become structural: the Central Markets could no longer meet the needs of a rapidly growing Parisian conurbation; the facilities were unsuitable; lorry traffic was putting a strain on the city centre; handling conditions posed hygiene problems; and working conditions were deteriorating (Chemla, 1980). The choice of Rungis was based on the need for metropolitan accessibility. Rungis shows that a market relocation can succeed when four conditions are met: a clearly established need; a location connected to major transport networks; robust institutional governance; and a functional scale capable of absorbing the flows.
Samarinda Indonesia	Useful as an example of wholesale market relocation and its effects on mobile vendors, using a GIS model that combines accessibility, routing, and the spatial distribution of benefits and costs. It is particularly useful for addressing spatial equity: a new location may improve certain corridors while reducing accessibility in other service areas.
Ahmedabad India	Deals with main generators of urban freight, notably wholesale markets, warehouse clusters and industrial estates. The article documents typical problems: land-use conflicts, heavy goods vehicle access, time restrictions, a lack of parking and inadequate infrastructure around freight generators
Manhattan, New York City USA	A methodological reference on large urban freight traffic generators. It does not deal specifically with markets, but it provides a solid basis for defining a market or bazaar as a concentrated generator of freight traffic, which may justify targeted urban logistics measures: management of delivery bays, consolidation, off-peak deliveries and regulated access (Jaller, Wang and Holguín-Veras, 2015)



Lima, Peru
Photo: Marc Wieland, Unsplash



Abu Dhabi
Photo: Ed Wingate, Unsplash

4

Abu Dhabi, UAE
Structuring the new sector of platform deliveries

The emergence of platform-driven, instant meal and grocery delivery

Definition and trend

The rapid growth of on-demand instant delivery marks a significant shift in urban logistics, at the intersection of freight, transport and mobility services. Driven by e-commerce expansion and accelerated by the COVID-19 pandemic, the sector has become a visible component of everyday urban life, reshaping local supply chains through frequent, time-sensitive delivery trips. In several fast-growing metropolitan markets, particularly in East Asia and the Middle East, platform-based meal and grocery delivery now operates alongside both traditional food distribution and modern retail logistics. In the United Arab Emirates, the main instant and on-demand delivery platforms include Talabat, noon Minutes/noon Food, Careem Food, Deliveroo, InstaShop, Smiles and Keeta.

A type of flow situated between ad-hoc peer-to-peer distribution and planned professional distribution

Instant delivery does not create an entirely new category of goods movement, but it does introduce a distinct urban logistics flow. It is primarily a B2C (Business-to-Consumer) flow, driven by individual orders placed through digital platforms and delivered directly to consumers. Unlike conventional retail distribution, it is difficult to consolidate or massify: demand is diffuse, order sizes are small, destinations are scattered, and delivery windows are extremely short. As a result, instant delivery generates short-distance, high-rotation movements, often operated by motorcycles, scooters, or light vehicles circulating continuously and unpredictably across dense urban areas. This makes the sector highly responsive to consumer demand, but also difficult to regulate, plan and integrate into wider urban freight strategies.

Externalities on urbanism: *from increased traffic, safety risks to environmental pollution*

While often presented as a convenience-driven innovation, instant delivery raises broader urban policy concerns. Its operating model can increase traffic intensity on local streets, add pressure on kerb space and sidewalks, and create safety risks linked to high-frequency, time-pressured rider movements. It also raises questions about environmental pollution, especially where deliveries rely on petrol-powered motorcycles or light vehicles, and about the spatial organisation of pick-up points, dark stores, waiting areas and platform-related logistics facilities. These impacts are often concentrated around restaurants, commercial streets, residential districts and transport corridors, making instant delivery both a convenient logistics service and a challenge for local land-use and mobility planning.

Focus on the United Arab Emirates case

The following section therefore examines how this sector operates in the United Arab Emirates, focusing on its economic model, platform organisation, workforce structure, and the conditions under which public authorities can shape its integration into the urban mobility system.

The economic and social model of the instant delivery sector in the UAE

Inhabitants' habits of consumption

Because the UAE's modern urban development is relatively recent, accelerating from the 1960s and especially after the creation of the federation in 1971, its retail and service systems did not follow the same gradual consolidation path observed in older urban markets. This helped create favourable conditions for rapid leapfrogging into digital commerce and app-based home delivery. The scale and speed of this transition are reflected in Abu Dhabi's demographic growth, with the emirate reaching 4.14 million residents in 2024 after a 51% increase over the previous decade, and in the UAE's near-universal digital connectivity, with 99% internet penetration. These conditions have supported a rapid shift toward app-based consumption: the UAE e-commerce market reached AED 32.3 billion in 2024, while online food delivery alone was estimated at around USD 2.5 billion, confirming that instant delivery is no longer a marginal service but a major urban logistics flow. However, the Abu Dhabi case remains relevant and adaptable for other cities in the Global South, especially where rapid urban growth, young consumer markets and high smartphone penetration are reshaping access to goods and services.

Role of services companies

In Abu Dhabi, the rapid expansion of app-based food delivery has been channelled through a highly structured labour and operating model in which couriers are not contracted directly by platforms but employed by a small number of intermediaries, "service companies", that **recruit, train, equip and allocate riders** across multiple platforms. Riders may request to switch to another platform but remain dependent on service company approval.

Service companies effectively gate access to the sector by sponsoring visas, providing motorcycles and insurance, and managing onboarding (including licensing requirements and a training period) before dispatching riders to platforms. Large e-commerce players, such as Amazon, can also use this flexible labour and fleet structure by contracting delivery service companies to access drivers during off-peak hours and optimise vehicle and workforce utilisation across different delivery segments.

Recruitment is organised through structured sourcing policies targeting specific origin countries, with service companies actively prospecting abroad to secure labour supply. Work authorisation is tightly tied to employment status—obtaining a work visa requires an employer—so these intermediaries effectively gate access to the sector by sponsoring visas, providing motorcycles, and managing onboarding (including licensing requirements and a training period) before dispatching riders to platforms.

Large e-commerce players, such as Amazon, can also use this flexible labour and fleet structure by contracting delivery service companies to access drivers during off-peak hours and optimise vehicle and workforce utilisation across different delivery segments.

Salary management

Unlike models where platforms typically pay riders directly, service companies receive platform payments and then pay couriers, while standardised uniforms and equipment reinforce operational control and brand visibility. Working conditions vary by platform in terms of shift rigidity and app availability, but the model aims to guarantee broad temporal and spatial coverage; reported monthly earnings for riders are in the order of AED 4,000–6,000 (950€ -1400 €), with many workers living in dedicated accommodations or shared housing and remitting income abroad.

Service companies can reduce some forms of precarity by providing a more stable organisational framework than purely self-employed platform work. However, rider income may still depend partly on delivery volumes, incentives and penalties, meaning that the model provides greater formal stability without fully removing performance-based pressure.

Autonomous drivers during work hours

Working time arrangements differ markedly across platforms but are organised to ensure full-day temporal and spatial coverage across the city. Riders are assigned a fixed daily start time and a designated start zone that remains stable from one day to the next; once logged on, however, their movements and job sequences during the shift are largely self-directed. Platform models differ in their approach to schedule management: Noon uses an app that stays constantly active and relies on more “theoretical” time slots, allowing greater availability and a continuous flow of deliveries. In contrast, Deliveroo’s model is more structured and protective, with strictly defined shifts (typically an eight-hour block with a possible two-hour extension) and an app that deactivates outside scheduled slots, preventing riders from taking on additional deliveries. To offset these constraints—specifically the lower order volume—Deliveroo offers higher pay per delivery. Some restaurants and shops still rely on in-house drivers rather than platform couriers.

Good social protection

Social protection requirements formally apply to employees and are generally mandatory, and workers are usually not expected to bear the associated costs; however, employment remains conditional on physical fitness, with limited retention options for riders who can no longer continue delivery work.

Public measures to structure the delivery sector

Instant delivery cannot be addressed only as a commercial service: it also raises planning, regulatory, and governance issues for cities seeking to manage new forms of freight mobility while supporting innovation, service accessibility, and private-sector initiative. For Abu Dhabi, the rise of platform deliveries raises a specific policy question: how can public authorities structure a fast-growing, fragmented and spatially dispersed activity without directly operating or financing the service?

Abu Dhabi has begun structuring the instant delivery sector through targeted public measures that address two complementary dimensions: rider qualification and the physical integration of delivery activity into the urban environment.

Measure to professionalise the sector: *Motorcycle Delivery Driver Conformity Program*

The Motorcycle Delivery Driver Conformity Program, launched in 2024 by the Abu Dhabi Quality and Conformity Council in coordination with the Integrated Transport Centre and delivery operators, aims to qualify motorcycle delivery drivers and ensure that they meet defined quality and safety standards. This program creates a regulatory entry point into a highly fragmented sector. It is explicitly framed as a public-private coordination mechanism to improve service quality, strengthen safe driving behaviour, create a safer work environment and increase public confidence in delivery services (ADQCC, 2024).

The process involves several steps. The driver must meet the profession’s prerequisites—particularly physical and mental aptitude—complete training at an ADQCC-approved centre, and then pass an exam at an accredited testing centre.

Measure on the physical integration of delivery activity: *Delivery Riders Hub initiative*

The Delivery Riders Hub initiative, launched by the Department of Municipalities and Transport in 2023, addresses a different but equally important issue: managing delivery riders in public space. The initiative provides dedicated rest and waiting areas with shade, air-conditioned seating, drinking water, phone-charging facilities, and motorcycle parking, particularly near restaurants and cafés. It was designed after interviews with delivery drivers and initially targeted delivery hotspots. From a planning perspective, the hubs are not only a welfare measure; they also reduce motorcycle parking on pedestrian paths, improve street appearance, limit conflicts over curb space, and support more orderly pick-up operations (DMT, 2023).

Integration of measures into a national policy

Other measures suggest that Abu Dhabi and the UAE are moving toward a broader governance framework for delivery and last-mile logistics. In Abu Dhabi, the creation and development of Delivery Riders Hubs are also among Integrated Transport Centre social infrastructure projects supported through the Authority of Social Contribution – Ma'an, indicating a mechanism through which community and private contributions can support public-interest mobility infrastructure (Ma'an & DMT, 2024).

At the national level, MoHRE has expanded seasonal heat-risk measures for delivery workers, increasing the number of rest stations from 6,000 during the 2024 Midday Break period to more than 10,000 in 2025.

Support electrification of the fleet

A pilot project launched in February 2026 by the Integrated Transport Centre, in partnership with Talabat (an on-demand delivery platform; a public-private collaboration), aims to test the electrification of last-mile delivery operations in Abu Dhabi. Rather than focusing only on the vehicle itself, the project introduces a supporting operational infrastructure for electric two-wheelers, including dedicated charging and battery-swapping facilities in high-demand areas. During the pilot phase, the initiative will assess the feasibility of expanding an electric delivery fleet while maintaining operational efficiency, safety, vehicle range, speed, control and rider comfort. It also creates a public-private testing framework through which Abu Dhabi Mobility can evaluate whether this infrastructure could later be scaled to other delivery companies, subject to approval. From a policy perspective, the measure matters because it links decarbonisation with operational regulation: public authorities support cleaner delivery technologies without directly operating the service, while platforms remain responsible for integrating electric vehicles into their delivery model.

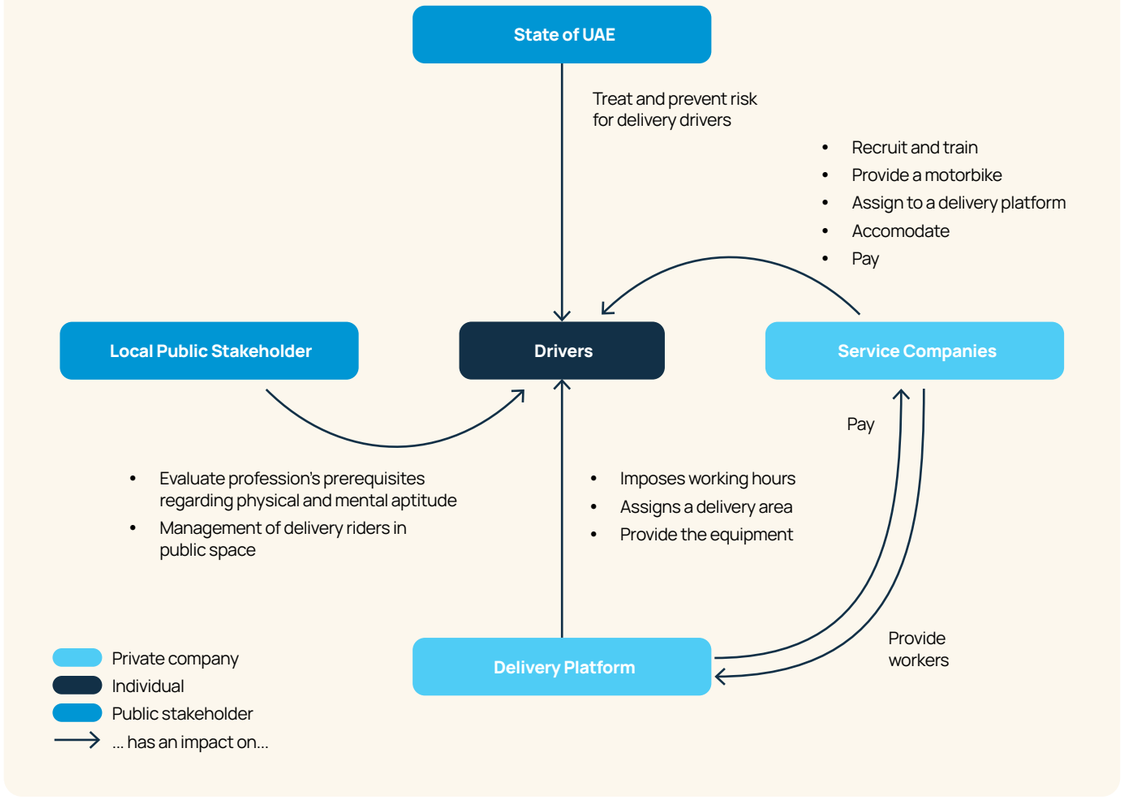
Preparing the future regulatory framework through innovation

Additional innovation-oriented pilots, including autonomous delivery vehicles in Masdar City, suggest that Abu Dhabi is using controlled trials to prepare future regulatory frameworks for last-mile logistics technologies (Abu Dhabi Mobility, 2025; Abu Dhabi Mobility, 2026).

Multi-Stakeholders arrangements

Thus, service companies can serve as the practical interface between public authorities, platforms, and riders. Instead of regulating thousands of individual delivery workers directly, authorities can channel requirements through identifiable companies responsible for recruitment, equipment, fleet management, insurance arrangements and operational supervision. This makes it easier to enforce standards on safety, training, vehicle use and social protection, especially in a sector where flows are diffuse and difficult to monitor.

Figure 3 **Multi-stakeholder arrangement for platform delivery workers in the UAE**



Comparison with instant delivery in France

The SANTE-COURSE survey (Bousmah et al., 2026) shows that platform delivery in France is marked by high social and administrative vulnerability. The workforce is overwhelmingly young, male and foreign-born, with many riders lacking residence permits and working without employee status. Because a residence permit is mandatory for non-European nationals to create a platform account and work, account renting (illegal) is widespread: nearly three-quarters of surveyed riders pay a third-party account holder to access the platforms. This produces a highly precarious operating model: riders report long working weeks, low hourly earnings, high exposure to accidents, deteriorating health and limited access to healthcare, with 32% having no health coverage.

The study therefore frames platform delivery as a labour and public health issue requiring coordinated action from public authorities, platforms, occupational health actors and civil society.

Compared with the UAE model, the key difference lies in the degree of formal structuring: in the Emirates, delivery work is generally organised through more formal employment and sponsorship arrangements, with mandatory social protection usually covered by the employer, whereas the French case is strongly shaped by self-employment, account renting and irregular administrative status.

Two fragmented sectors, a single challenge that needs a better structuration

Common operating logic

Instant delivery and informal public transport systems share a similar operating logic. Both rely on small vehicles, dense territorial coverage, high trip rotation and the capacity to respond quickly to dispersed, low-volume demand. In both cases, these mobility forms have emerged to fill service gaps that formal systems could not fully address, whether in terms of spatial coverage, service frequency, affordability, responsiveness, or last-mile accessibility. For this reason, the policy objective should not be to hinder these models, but to better structure and regulate them so that they continue to meet real mobility and logistics needs while limiting their urban, social and environmental externalities.

Planning and regulation challenges

These flexible, adaptive services can expand quickly and respond to unmet territorial needs. However, they also produce fragmented, highly mobile flows that affect traffic safety, curbside management, sidewalk pressure, and the organisation of pick-up, waiting, and parking areas. This highlights the limits of demand-responsive mobility systems to licensing or vehicle-based controls, and more generally, the difficulty of capturing them through conventional planning tools.

As with informal passenger transport, regulation therefore needs to move beyond simple authorisation and enforcement. It requires a planning framework that recognises instant delivery as part of the urban mobility ecosystem and defines where delivery activity should be accommodated, restricted, prioritised or better managed.

Data and institutional coordination

A central implication is the need for greater transparency and structured data exchange between delivery platforms, service companies and public authorities. Because instant delivery is digitally organised, platforms hold information that is highly relevant for urban planning, including trip volumes, peak periods, spatial concentration of orders, rider waiting locations, accident exposure and vehicle use. Sharing aggregated and anonymised data could help authorities identify delivery hotspots, plan dedicated pick-up and rest areas, manage curbside conflicts, improve road safety interventions, and assess the sector's environmental footprint. This does not require public authorities to operate the service directly. However, it does require them to establish clear rules for data governance, platform accountability and coordination between transport, land-use planning, labour and environmental agencies.

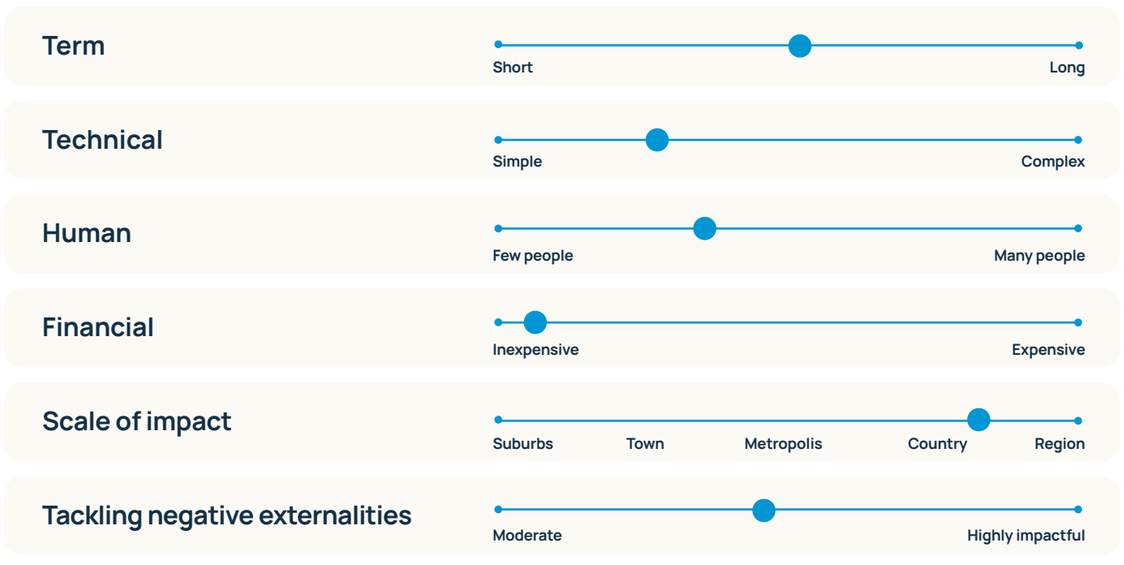
Governance and accountability model

The social dimension remains important, but it should be understood as part of broader urban mobility governance. In both instant delivery and informal passenger transport, public authorities need to clarify who is responsible for vehicle compliance, insurance, accident protection, health coverage and income security. In the UAE model, this issue is partly addressed through more formal employment and sponsorship arrangements, where service companies act as intermediaries between platforms, riders and public authorities. This makes the sector easier to structure than fully individualised or informal models, because responsibility can be channelled through identifiable companies. For mobility planners, the main lesson is that service companies can become a practical regulatory interface: they help organise a fragmented workforce and fleet, while giving public authorities a clearer entry point to enforce standards on safety, vehicle use, working conditions, data reporting and the use of urban space. Instant delivery is close to informal passenger transport in its operational logic: both rely on small vehicles, dense territorial coverage, high trip rotation and the ability to respond quickly to dispersed, low-volume demand.

Key learnings

The UAE instant delivery model offers a useful reference for fast-growing cities in the Global South because **it responds to a clear territorial need**: providing rapid, flexible access to goods in urban environments where digital services, dispersed demand and high consumer expectations have grown quickly. Its main strength lies in the stability of its organisational model. Platforms generate demand and organise digital allocation, while service companies provide an intermediary layer by recruiting riders, managing fleets, supplying equipment and ensuring basic compliance with employment and social protection requirements. **This model fills an important gap between fragmented self-employed delivery work and capital-intensive logistics operators:** it remains flexible and relatively light, but is more structured than purely informal or individualised delivery systems. For public authorities, it is also a low-cost model, as the sector scales largely through private initiative and **requires limited direct public investment**; the role of government is mainly to regulate, accompany and steer the sector through rules on safety, labour protection, vehicle standards, curbside use, data sharing and platform accountability. The model is therefore relevant for Global South contexts because it can support service accessibility, job creation and private-sector innovation, provided that regulation prevents flexibility from translating into excessive risk transfer to workers, unsafe driving practices or unmanaged pressure on urban space.

Indicators



Other cases

The following cases provide comparative examples of how public authorities have started to regulate platform delivery and app-based work. They are relevant to the Abu Dhabi case because they show different ways to manage the risks created by fragmented, demand-responsive delivery systems: through platform accountability, data reporting, minimum standards, welfare funds, insurance obligations, rest infrastructure, algorithmic transparency and public-private coordination.

Geography	Main relevance
Singapore	Useful as an example of a national framework that creates specific protections for platform workers without simply treating all platform work as standard employment. The Platform Workers Act covers ride-hail and delivery services, including work injury compensation and social security contributions, making it relevant for models that seek to preserve operational flexibility while reducing labour risk.
Chile	Relevant for Global South comparison because Chile introduced a legal framework for digital platform workers that distinguishes between dependent and independent platform workers while setting common obligations on platform companies. It helps clarify how regulation can define platform responsibilities without imposing a single employment model.
India Rajasthan and Karnataka	Highly relevant for Global South contexts because these states illustrate welfare-based regulation financed partly through platform-related contributions. Rajasthan's 2023 law and Karnataka's 2025 framework create registration and social security mechanisms for platform-based gig workers, offering a low-public-investment approach in which public authorities establish the welfare architecture while platforms contribute to worker protection.

5

Lomé, Togo
Investing in freight infrastructure in gateway cities: balancing connectivity and local development



Freight port
Photo: Cegoh

Lomé, a gateway to the Sahel

Gateway cities: major urban hubs

Urban nodes are cities or metropolitan areas that function as points of concentration, exchange and redistribution within freight and supply chain networks. They connect local production and consumption systems with wider regional, national or international flows through transport infrastructure, logistics facilities and coordination services.

These nodes form a hierarchy based on their connectivity, the range of transport modes and services they accommodate, the volume and diversity of flows they handle, and the geographical extent of the markets they serve. Some nodes primarily organise local distribution, while others connect several corridors and supply chains across much larger territories. Within this hierarchy, **gateway cities** constitute a particularly strategic category of high-order urban nodes, as an urban node that **connects a hinterland to external (national, regional or global) markets** by concentrating the **interfaces that make long-distance flows possible**—typically a seaport or airport, major rail/road junctions, inland container depots/dry ports, customs and border services, and the logistics and business services that coordinate trade flows.

Lomé, a strategic hub for the country and the region

With a total cargo throughput of 30.6 million tonnes, including 20 million tonnes of transhipment (2024), the Autonomous Port of Lomé is the key infrastructure that supports Lomé's role as a 'gateway'. It is Togo's main maritime entry point and a major transit port for landlocked countries in West Africa, particularly **Burkina Faso, which accounts for 80 per cent of transit traffic,** and **Niger and Mali, which together account for more than 10 per cent of transit traffic** at the Port of Lomé (Togo First, 2024). The 667 km Togolese logistics corridor links the Port of Lomé to Cinkassé, on the Burkinabe border.

The cargo flows handled at Lomé combine three main functions: domestic traffic, transit to the Sahelian hinterland and regional transhipment. Goods include containers, petroleum products, imported foodstuffs, clinker, wheat, and industrial and consumer goods destined for the Togolese and Sahelian markets. Like most gateway cities, Lomé can be described as a transit city (see section 2.1, publication 'Understanding freight and logistics in urban areas of the Global South', AFD).

Gateway performance and territorial integration: *the nodality-polarity challenge*

Gateway performance can be scored on two distinct metrics: nodality and polarity.

- Nodality refers to the ability of a city to function as a logistics interface, measured through port throughput, transit volumes, corridor performance, intermodal connections and integration into global production and distribution networks.
- Polarity refers to the capacity of the same gateway to generate territorial development through employment, productive linkages, proximity-based synergies, local value creation and integration with the surrounding urban and regional economy.

These two dimensions may evolve at different speeds: improvements in logistics connectivity (nodality) do not automatically translate into equivalent local development outcomes. The challenge is that a gateway may become increasingly efficient as a node without producing equivalent benefits for the host city and its hinterland (Mareï and Piveteau, 2022).

Tensions exacerbated by the city's role as a gateway

This distinction is particularly relevant for Lomé and other gateway cities across the Global South. Investments in ports, terminals, corridors and logistics platforms can improve international accessibility and reduce logistics costs, but they can also generate asymmetric outcomes. The gateway may become more competitive for global and regional supply chains. At the same time, the surrounding city bears a significant share of the externalities: truck traffic, congestion, road deterioration, land-use conflicts, safety risks, emissions, noise and pressure on urban land. A recent study on freight flows in Greater Lomé identifies congestion, poor road conditions and a lack of parking spaces as the main challenges to the sustainability of urban logistics flows (Djossou et al., 2025).

The investment strategy for logistics

In this context, Togo's recent logistics strategy can be read as an attempt to strengthen Lomé's nodality while improving its territorial integration (polarity). Infrastructural investments over the last X years, financed by a range of actors…, have aimed not only to increase port capacity and corridor performance, but also to better connect the gateway to industrial zones, national production areas, and urban mobility systems. This dual objective — reinforcing Lomé's role as a regional logistics node while managing its local impacts and linkages — provides the rationale for the main investments examined below: the Lomé Container Terminal, the Lomé–Ouagadougou–Niamey corridor and the Togo Transport Connectivity and Logistics Improvement Program.

The Lomé Container Terminal (LCT)

The first major investment was the **Lomé Container Terminal (LCT)**, developed as a greenfield container terminal within the port in 2014 (when port operations began). The Togolese government financed it through a public-private partnership and granted a 35-year concession. The project was worth approximately **EUR 352 million**, financed 28% by equity and 72 % by debt, with an initial target capacity of 1.5 million TEUs (twenty-foot equivalent units – the standard unit used to measure the volume of containers handled by a port or terminal) per year, and covered an area of 53 hectares at the time of its creation.

This terminal has strengthened Lomé's role as a regional hub, enabling it to accommodate large container ships and developing transhipment activity on a West African scale. Industry sources indicate that the LCT's current estimated capacity could reach around 2.2 million TEUs per year, with plans for further expansion, and that it now covers 59 hectares.

The port is organised as a public port with partially concessioned operations. The Autonomous Port of Lomé (a public body) serves as the port authority. However, a private operator runs the LCT container terminal day-to-day under a 35-year concession agreement with the Togolese government.

The Lomé–Ouagadougou–Niamey (LON) Economic Corridor

The second major investment is the 667 km Lomé–Ouagadougou–Niamey (LON) economic corridor project, approved by the World Bank in 2021 for USD 470 million (approximately EUR 411 million). It aims to improve regional connectivity, reduce transport times and enhance the quality of transport and transit services between Togo, Burkina Faso and Niger (World Bank, 2021). The corridor and connectivity infrastructure is primarily funded through sovereign and concessional financing, notably via the World Bank's International Development Association (IDA), with a regional approach involving Togo, Burkina Faso and Niger.

This project combines several components:

01

The development of community infrastructure and access roads.
The project has enabled local developments that connect communities, agricultural areas and secondary markets to the main corridor. These aim to ensure that the investment does not solely benefit international transit, but also improves local accessibility, access to production areas and the economic integration of the regions through which the corridor passes. This component represented an investment of USD 265 million (EUR 231 million), equivalent to approximately 56% of the total World Bank financing for this project.

02

Infrastructure improvements and the introduction of digital solutions and traffic management tools to enhance the traceability of goods (tracking, equipment to monitor truck overloading), reduce transit times, better organise lorries at critical points such as checkpoints (ports, borders) and enhance the reliability of the Lomé–Ouagadougou–Niamey corridor to help hauliers plan their journeys more effectively (sharing information on road conditions, incidents, roadworks, border delays or the availability of parking areas). This component represented an investment of USD 126 million (approximately EUR 110 million).

03

Improving transport and transit services.
This is divided into two main components. The first component focuses on professionalising the road transport sector. In particular, it funds technical assistance, training for hauliers, eco-driving, maintenance practices, equipment for training centres, and fleet renewal schemes. This includes a lorry renewal programme, with scrappage incentives used as a down payment to enable qualified operators to access leasing schemes to purchase newer vehicles. The second component focuses on transit and border-crossing procedures. It funds improvements to border-crossing facilities, processes and procedures, particularly at the Cinkassé border post between Togo and Burkina Faso. The aim is to better integrate the tracking of vehicles and goods, simplify procedures, and reduce delays associated with checks, customs and regional transit. This component represented an investment of USD 63 million (EUR 55 million).

04

Finally, **implementation support**, which represented an investment of USD 16 million (EUR 14 million) (World Bank, 2024).

Infrastructure improvements and the introduction of digital solutions and traffic management tools



Improving transport and transit services



The development of community infrastructure and access roads



Togo Transport, Connectivity and Logistics Improvement Programme

A third investment is the Togo Transport, Connectivity and Logistics Improvement Programme, funded by USD 200 million (approximately EUR 175 million) from the World Bank's International Development Association (IDA). 2026–2031 project aims to improve logistical efficiency in Greater Lomé, reduce conflicts between port traffic and urban mobility, rehabilitate the rail link between the Autonomous Port of Lomé and the Adétikopé Industrial Park, and enhance access to high-potential agricultural areas. The AIIB will also co-finance USD 75 million (approximately EUR 66 million) (World Bank, 2025).

Adétikopé Industrial Park (PIA)

Located north of Lomé, the Adétikopé Industrial Platform (PIA) is designed as an integrated industrial and logistics zone, comprising an inland container depot (ICD) which handles the storage, handling, loading and unloading of containers. This facility enables some logistics operations to be relocated away from the Autonomous Port of Lomé, relieving congestion in the port area and strengthening the link between Lomé, the north-south corridor, and the landlocked countries in the hinterland.

The PIA is currently connected to the port and the north-south corridor mainly by road, and a Port of Lomé–PIA freight rail link is planned or is currently being upgraded as part of the Togo Transport Connectivity and Logistics Improvement Programme.

In 2026, the cumulative investments announced for the platform amounted to approximately 350 billion CFA francs (around 530 million euros) (Togo First, 2026).

Sector Organisation

Reforms implemented

These investments in logistics infrastructure have been accompanied by a series of reforms: the legal framework, the professionalisation of road transport, the facilitation of transit, digitalisation, technical inspections, training and the start of city-port integration. Some reforms have already been adopted, while others remain part of ongoing or planned programmes. These reforms include:

- the adoption of a Transport Framework Act, enacted on 27 December 2022
- the formalisation of transport operators, by introducing a system of licences, registration and compliance for transport and logistics companies
- the creation of a sectoral consultation framework to facilitate dialogue between the State, public authorities, transport operators, intermediaries, shippers and other stakeholders in the sector
- the development of professional certifications through training programmes
- the modernisation of vehicle inspections to improve the reliability of journey times and reduce the negative impact of ageing fleets on national and urban roads
- support for fleet renewal, through a law on leasing (adopted in 2019)
- the digitisation of transport data
- the simplification of customs and transit procedures, through the introduction of a one-stop shop for foreign trade

The aim is to gradually move away from a sector dominated by fragmented, undercapitalised and partly informal operators to a consolidated, professionalised and coordinated sector. For an international corridor such as Lomé–Ouagadougou–Niamey, this formalisation process is essential: it enables better oversight of operators, professionalisation of services, improved safety levels, rebalancing of territorial development outcomes, and overall corridor performance.

The results of the investments

Operating efficiency gains

The World Bank reports that, on the Togolese section of the Lomé–Ouagadougou corridor, median transit time has fallen from 8 to 5 days, and variability in transit times has fallen sharply, from 28 to 3.2 days.

An annex to the World Bank report also highlights more specific improvements at certain stages of the logistics process. The average transit time between the Port of Lomé and Cinkassé for containerised freight is estimated at 1.94 days in 2022, compared with 3 days in 2020 – a saving of 1.06 days attributed to the project. The average time taken for transit formalities at the Port of Lomé has fallen from 36.3 hours to 22.26 hours, a reduction of 14.04 hours. The time taken to install tracking devices and issue advance notices to hauliers has fallen from 8.23 hours to 4.45 hours, whilst exit formalities at Cinkassé have fallen from 26.82 hours to 23.5 hours.

These time savings point to improved corridor efficiency and predictability, but they should not be interpreted as direct evidence of higher operating profits for transport operators. Shorter, more reliable transit times can reduce waiting costs, vehicle immobilisation, inventory buffers, and delivery uncertainty. They may also allow higher vehicle utilisation if hauliers can complete more rotations with the same assets. However, whether these gains translate into operating profits depends on freight rates, competition, fuel and labour costs, contract structures, empty return trips, access to cargo, and how benefits are distributed among hauliers, freight forwarders, shippers, and final customers.

Governance that needs to be improved

The World Bank highlights that transport governance in Greater Lomé remains insufficiently integrated. Despite the existence of a Sustainable Urban Mobility Plan, implementation remains limited. In contrast, sectoral responsibilities remain divided among several ministries—road transport, rail, maritime transport, public works, and rural roads—without any explicit mechanism for overall coordination. This institutional fragmentation limits the capacity to organise urban mobility, port logistics and stakeholder consultation at the metropolitan level (World Bank, 2025). Togo has already invested heavily in infrastructure, but metropolitan freight governance remains a work in progress (World Bank, 2025).

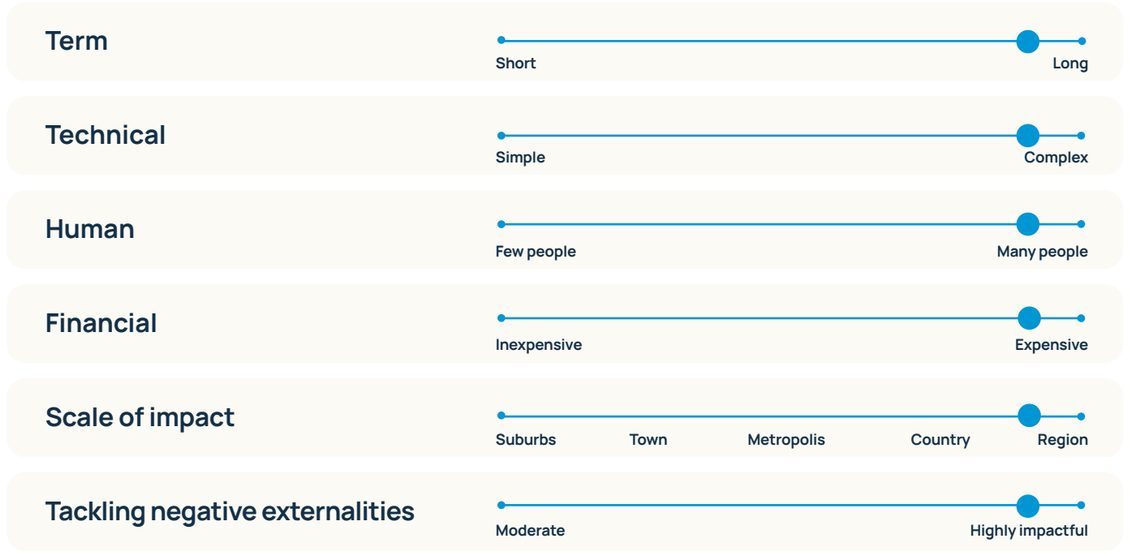
Key learnings

The Lomé case shows that investments in gateway infrastructure should not be assessed only through nodality, understood as port capacity, corridor performance and integration into regional and global logistics networks. They should also be assessed through polarity: the ability of the gateway to generate territorial benefits, manage urban impacts and strengthen linkages with the metropolitan economy, industrial zones, local labour markets and the hinterland. In practice, this means planning beyond the port perimeter. Roads, inland platforms, dry ports, logistics land, truck parking, warehouse locations and urban freight routes are all part of the gateway system.

For gateway cities, the central challenge is to ensure that improvements in connectivity do not simply shift costs onto the city. Without coordinated freight governance, gains in port and corridor competitiveness can be partly offset by congestion, road deterioration, land-use conflicts, safety risks and environmental externalities. Lomé therefore highlights the need to align infrastructure investment with a city-wide development approach, logistics land-use planning, logistics land-use planning, traffic management, professionalisation of transport operators and clear regulatory frameworks.

The case also underlines a common governance gap in gateway cities: the port, the city and the regional corridor are operationally interdependent, but often institutionally fragmented. Responsibilities for infrastructure, land use, freight regulation, urban mobility and corridor management are distributed across different agencies and scales of government. Strengthening polarity therefore requires governance mechanisms that connect port authorities, national ministries, local governments, logistics operators and communities, so that gateway performance supports territorial integration rather than remaining limited to throughput and transit efficiency.

Indicators



Case studies from cities in the Global South and beyond

Other cases

Geography	Main relevance
Mombasa Kenya – Northern Corridor	A coastal port serving several landlocked or semi-landlocked countries. Useful for demonstrating that port performance is heavily dependent on bottlenecks in the inland corridor.
Abidjan Ivory Coast	A case study similar to Lomé in a French-speaking West African context: a regional port, a Sahelian hinterland, and challenges relating to connectivity, transit and competition between corridors.
Jakarta / Tanjung Priok Indonesia	Digital governance and urban logistics: the case study examines digitalised services and stakeholder coordination in a major urban port.
Manila Philippines	Useful for analysing congestion in an urban port, the potential redistribution of traffic to a secondary port, and the trade-offs between logistics performance and metropolitan impacts.
Buenaventura Colombia	A useful case study for discussing port competition, shippers' port choice, and the effect of infrastructure on the attractiveness of a national gateway.



Lomé, Togo
Photo: Evariste Houwadan, Pexels



Kigali
Photo: Faustin Nkurunziza, Pexels

6

Kigali, Rwanda
Building a Logistics Gateway through Progressive and Coordinated Infrastructure Development

From a Landlocked Economy to a Regional Logistics Gateway

A Country Dependent on Its Neighbours

With no direct access to the sea, Rwanda is located approximately 1,400 km from major seaports and relies on two major routes for its international trade:

- the **Central Corridor**[1] connecting Kigali to the port of Dar es Salaam in Tanzania;
- the **Northern Corridor**[2] connecting the country to the port of Mombasa in Kenya.

Most of the country's imports currently travel via these two road corridors, which converge in Kigali. Within regional supply chains, Kigali functions as an inland hub: The capital—at the heart of the road network—concentrates much of the country's demand, production, and logistics services, but remains dependent on maritime gateways in neighbouring countries.

This dependence exposes Rwandan businesses to long-distance transportation costs, delays, and uncertainties at borders and in transit countries, as well as to the volatility of port access conditions (MINICOM, 2024; World Bank, 2024). Nevertheless, its location offers regional potential. Kigali sits at the junction of trade routes connecting Indian Ocean ports to other landlocked countries in the Great Lakes region (Burundi, DRC, etc.).

1 https://centralcorridor-ttfa.org
2 https://www.ttcanc.org/

From national ambition to implementation: *logistics as an enabler of industrial transformation*

Rwanda's logistics ambition is embedded in a broader strategy of economic and industrial transformation. Despite sustained growth, the country still has a relatively limited industrial base. **Vision 2050 therefore places logistics at the heart of the country's productive transformation, calling for** "competitive manufacturing anchored to a regional logistics hub". It explicitly envisages **Kigali consolidating its position as a regional trading hub and gateway to East and Central Africa** (Government of Rwanda, 2020).

At national level, Rwanda's ambition to become a regional logistics hub has been translated into successive logistics, industrial and trade strategies. The Logistics and Distribution Services Strategy for Rwanda 2012–2022 established the initial framework, identifying priority investments in the Kigali Logistics Platform, regional logistics centres and air-cargo facilities. The Special Economic Zone (SEZ) programme provided a complementary framework for concentrating industrial activities in serviced locations. More recently, the National Strategy for Transformation 2024–2029 (NST2) and the Industrial Policy 2024–2034 have reinforced the role of logistics infrastructure in supporting industrial development, trade and export growth, with priorities covering regional transport corridors, freight-priority roads, rail connectivity and air-cargo facilities. This framework is being further updated through the preparation of the Logistics and Distribution Services Strategy for Rwanda 2025–2035, supported by KLPConnect. At city level, the 2013 Kigali Transport Master Plan introduced proposals for peripheral and intermodal logistics hubs and dedicated freight routes, subsequently reinforced by the Kigali Master Plan 2050 and its Transport Plan (Government of Rwanda, 2012; City of Kigali, 2013; MINICOM, 2018; City of Kigali, 2020; MINECOFIN, 2024; MINICOM, 2024).

Taken together, these strategies assign logistics three complementary functions:

01

Reducing the cost and improving the reliability of imports required by domestic production

02

Increasing the competitiveness and diversification of Rwandan exports

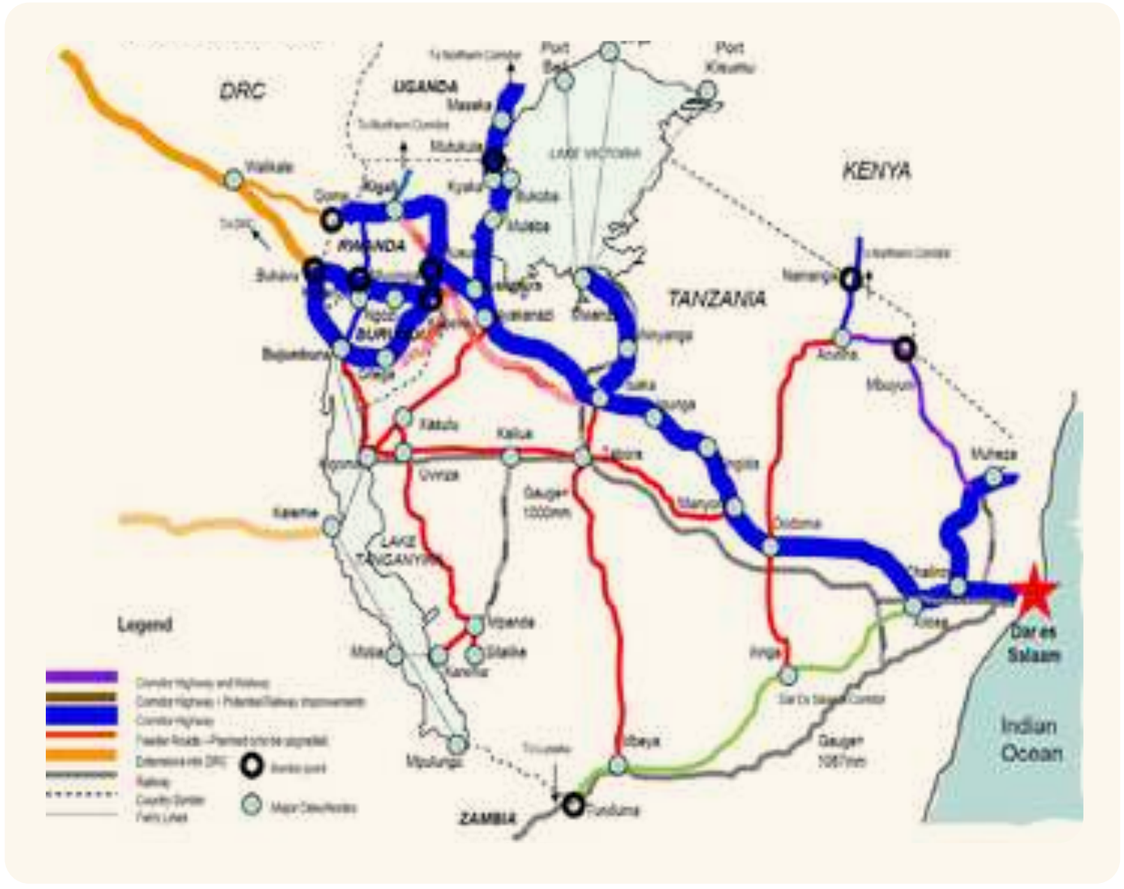
03

Developing Rwanda's longer-term role in regional distribution, transit and re-export flows

Kigali as the main spatial expression of this national strategy

Kigali is central to implementing these three objectives. As the country's main economic and transport hub, the capital concentrates industrial activities and an increasing range of logistics functions, including freight consolidation, customs clearance, warehousing and air cargo. Developing these capacities is intended to strengthen Kigali's role as an inland gateway serving both domestic and regional markets. However, this concentration also raises urban mobility challenges, as new freight-generating activities place additional pressure on a road network already facing growing passenger transport demand. The location and integration of logistics infrastructure are therefore critical to reconciling Rwanda's regional trade ambitions with Kigali's urban mobility objectives.

Figure 4 **Central Corridor, Africa**



Source: Central Corridor Transit Transport Facilitation Agency [CCTTFA] Official Map

Specialised logistics hubs to create a gateway function

The progressive convergence of investments

Kigali's logistics transformation has taken shape progressively since the early 2010s. It has not been implemented through a single city-level logistics action plan or investment programme. Instead, successive and complementary national and metropolitan frameworks have guided it.

The sequence described below should therefore be understood as the progressive convergence of investments with different sponsors and timelines, rather than the implementation of a single master programme. Taken together, these investments nevertheless form a relatively clear functional progression: concentrating productive activities in serviced industrial zones; developing inland logistics capacity to handle, store and consolidate goods; and strengthening access to international markets through improved road connections and a new international airport.

Special Economic Zones in Kigali: *Concentrating Production and Generating a Critical Mass of Economic Activity*

The **Kigali Special Economic Zone (KSEZ) is one of the earliest building blocks of Rwanda's industrialisation and SEZ programm**e. Rwanda's SEZ programme began in 2009. The KSEZ was developed in two main phases. Phase I, covering 98 hectares, was completed in 2013, while the 178-hectare Phase II was developed between 2013 and 2017. The zone provides serviced industrial land and shared infrastructure, including roads, water, electricity, sewerage, fibre-optic networks and fire protection systems. By 2017, Phase I was fully allocated, with 31 industrial firms and 15 warehouses operational, while more than three-quarters of Phase II plots had already been booked (MINICOM, 2018). The KSEZ's development was also linked to a wider restructuring of industrial land use in Kigali. From 2013, part of the industrial activity historically located in the Gikondo wetland was progressively relocated to the KSEZ, allowing the former industrial area to be rehabilitated as a wetland while concentrating on industrial activities in a purpose-built zone. By 2021, the Rwanda Development Board reported 126 operating companies and 14,684 jobs in the KSEZ (RDB, 2021).

This concentration fulfills an important logistical function: it creates a critical mass of demand for inputs, storage, transportation, and exports. The KSEZ is therefore not only a tool for industrial planning; it also becomes a major generator of flows that can justify developing more specialised logistics services.

The model was expanded in 2026 with the Bugesera Special Economic Zone (BSEZ). Covering approximately 335 hectares, the BSEZ is being developed through a partnership between the Government of Rwanda and ARISE Integrated Industrial Platforms. Its proximity—about 10 km—to the future airport (New Kigali International Airport), located 30 km southeast of Kigali and expected to be operational in 2028, is a key strategic advantage (RDB, 2022). By the end of 2023, the Bugesera Special Economic Zone already had 16 operating companies and more than 1,500 permanent jobs, even as the first phase infrastructure was still under construction (RDB, 2024; ARISE IIP, 2025).

The BSEZ thus represents a further step forward: industrial development is beginning to shift toward the Bugesera region, near the future air gateway, creating **the conditions for a more direct link between production, warehousing, and international freight.**

The Kigali Logistics Platform: *Adding the Handling and Consolidation Functions of an Inland Port*

This industrial growth has been complemented by infrastructure specifically dedicated to cargo handling. Built between 2016 and 2019 in Masaka, Uganda, and operated by DP World (a multinational logistics company), the Kigali Logistics Platform (KLP) functions as a dry port and inland logistics hub. It brings some of the functions normally provided at maritime gateways closer to Kigali: container terminals, storage, cargo handling, customs clearance, cold chain, transportation, and various business services (World Bank, 2024).

The first phase notably included 30,000 m² of warehouse space, refrigerated storage capacity, a terminal designed to handle approximately 50,000 TEU (twenty-foot equivalent units) per year, and a parking lot capable of accommodating nearly 200 heavy-duty trucks (DP World, 2021). According to the World Bank, the facility handled approximately 100,000 metric tons per year in 2024, of which about 30% originated from or were destined for international markets (World Bank, 2024).

For a landlocked country, the dry port makes it possible to centralise logistics functions that were previously more dispersed along the international supply chain. Goods can be received, stored, consolidated, cleared through customs, or redistributed from Kigali, strengthening the capital's ability to organise cargo flows rather than receive them.

The New Bugesera Airport in Kigali: *Providing the System with Direct Access to International Logistics Chains*

The New Kigali International Airport, currently under construction in Bugesera, represents the next step in this capacity expansion. The new airport is intended to replace existing infrastructure, whose expansion is limited by urban density and the surrounding topography. It is designed to handle 8 million passengers and 150,000 metric tons of cargo per year. According to the current schedule, it is set to be completed by the end of 2027 (ATL, 2026).

This new infrastructure should address the current lack of sufficient air capacity and multimodal connectivity, which is currently limiting Rwanda's ambition to become a regional logistics hub (World Bank, 2024). Until now,

most international trade has relied on long road routes to Indian Ocean ports. The new airport will provide a direct international connection, particularly well-suited for high-value-added goods, time-sensitive products, or those requiring a cold chain.

The new Kigali International Airport is a key infrastructure project within the Rwandan government's national "Vision 2050" policy. The objective is to "maximise the catalytic impact of the airport." An Airport City Master Plan calls for industrial, logistics, commercial, and wholesale activities around the site, reinforcing potential interactions with the neighbouring BSEZ (ATL, 2026). This development zone is also expected to serve as the entry point for the rail link to Tanzania, further strengthening its role as a multimodal logistics hub.

A Gradual Expansion Based on Complementary Functions

Taken separately, these facilities serve different needs. Their value becomes particularly apparent when viewed within the context of a strategy to develop infrastructure designed to streamline the supply chain and logistics in Rwanda:

- KSEZ has made it possible to relocate industrial activities and concentrate logistics needs at the eastern entrance to Kigali;
- KLP has added specialised storage, consolidation, handling, and customs clearance capabilities, also at Kigali's eastern entrance;
- BSEZ is now extending the production system southeastward to Bugesera and bringing certain industrial activities closer to the future air gateway;
- the new airport will finally provide additional international capacity for high-value-added cargo flows and strengthen the region's role as a hub.

These projects support a national vision and help prevent the city from becoming congested with transit traffic. They play complementary roles, with each investment altering traffic flows and creating new needs. As traffic sources increase in capacity, the road network must evolve to connect the hubs.

Infrastructure to Connect Logistics Hubs

National highways converge on Kigali, and freight traffic—including transit traffic—contributes to heavy truck traffic within the metropolitan area (City of Kigali, 2020). The strategy therefore involves acting sequentially at several levels:

Connecting logistics platforms	Bypassing the metropolitan area	Diversifying the modes of transport for regional connections

In the short and medium term: *KLPConnect to directly connect Masaka, Bugesera, and regional corridors*

The **Kigali Logistics Platform Connectivity Development Project (KLPConnect)** is an approximately USD 140 million programme, primarily financed by the World Bank, which aims to improve connectivity between the Kigali Logistics Platform (KLP) in Masaka and Rwanda's regional transit corridors, while supporting economic activities along the relevant routes (World Bank, 2024). **Approved in March 2024 and effective since August 2024, the project will run until September 2030.** The project includes upgrading approximately 70 km of existing roads to provide a more reliable connection between the KLP, the Bugesera development area, and the Ngoma–Nyanza route, which connects to the Central Corridor. Once completed, these connections are expected to enable more freight traffic approaching Kigali from the east, south and west to access the KLP without passing through the city centre. They will also strengthen connections between the KLP, the Bugesera area and the new international airport, while preparing for potential integration with the future rail network (World Bank, 2024).

Figure 5 **KLP Connect Project (World Bank)**



In the medium and long term: *the Kigali Ring Road to separate regional traffic from urban mobility*

Identified in the 2013 Kigali Master Plan 2050, the Kigali Ring Road (KRR) is intended to separate regional transit from travel within Kigali by routing freight around the city rather than adding heavy truck traffic to **the urban network** (City of Kigali, 2020).

The Master Plan outlines the ring road as part of a phased implementation plan. Planners have identified the need for this bypass over several planning cycles. However, the Rwandan government is struggling to finance this 98-km project, estimated to cost USD 300 million (due in particular to technical constraints and the cost of land acquisitions). Given expected growth in the airport area, KLPConnect could serve as the first phase of the KRR, help reorganise traffic flows in the Kigali metropolitan area, and support the city's expansion toward the southeast.

In the long term: *rail to reduce dependence on road transport*

A longer-term step would be introducing a **rail alternative for long-distance freight transport**. Rwanda currently has no operational railway, and most international freight still relies on road connections to the ports of Dar es Salaam and Mombasa. The proposed **Isaka–Kigali Standard Gauge Railway (SGR)** would connect Kigali to Tanzania's rail network and, through the Central Corridor, to the Port of Dar es Salaam. The wider regional SGR programme also includes connections towards Burundi (MININFRA, 2022; African Union, 2026).

The project is **still in the planning and financing stage, not under construction, in Rwanda**. Rwanda has completed the feasibility study, detailed design, and corridor demarcation on its side, and Rwanda and Tanzania have established a bilateral framework for joint implementation (MININFRA, 2020; MININFRA, 2022). However, construction financing remains largely unconfirmed. Tanzania's 2025/26 transport programme still identifies the Isaka–Rusumo–Kigali section among the SGR extensions for which the government is seeking financing from development partners and private investors, including through public-private partnership arrangements (United Republic of Tanzania, 2025).

No firm construction or commissioning date can therefore be considered confirmed at this stage. Recent Rwandan territorial planning documents continue to classify the railway as a proposed, long-term infrastructure, while safeguarding its future alignment towards Kigali (Government of Rwanda, 2025).

Long-term planning as a framework for ensuring consistency in investments

Organising a Phased Rollout Rather Than a Final State

The Kigali Master Plan 2050 is a **city-wide spatial planning framework covering land use, housing, economic development, environmental protection, public facilities and infrastructure, and mobility and transport.**

The value of the 2050 Master Plan lies less in the detailed scheduling of each project than in its ability to align investments with different timelines within a single territorial trajectory. It makes it possible to set aside spaces, anticipate interfaces, and maintain consistency among projects carried out over different time horizons.

Planning for Future Logistics Hubs

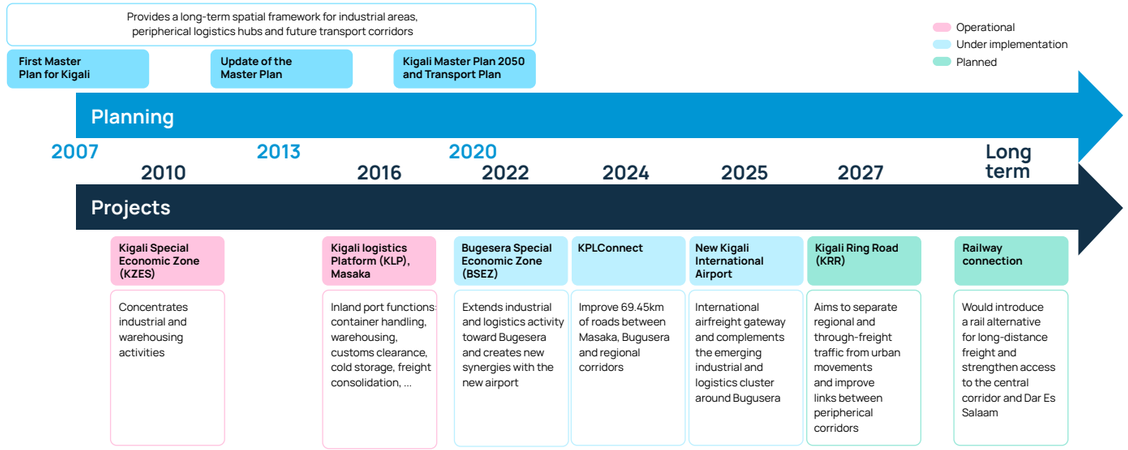
The Kigali Master Plan 2050, launched in 2020, organises the capital's development around specialised economic hubs and key corridors. In particular, it identifies industrial, logistics, and warehousing activities as functions to concentrate in suitable, well-connected zones rather than scatter them throughout the urban fabric.

The plan thus helps **preserve strategic locations before urbanisation makes development more difficult or costly.** This is particularly important in the Rwandan context: the KSEZ experience has already shown that urban expansion and rising expropriation costs can limit the expansion of an industrial zone (MINICOM, 2018).

Anticipating Connections Before They Are Built

The Transport Plan of the Kigali Master Plan 2050 complements this spatial organisation by identifying the infrastructure needed to support growing traffic flows gradually. In particular, it envisions a network of peripheral logistics hubs connected to major transportation infrastructure and recommends diverting transit traffic away from the urban network as much as possible. The future Ring Road and land reserves for rail connections are part of this approach; incorporating them into the planning process prevents other uses from occupying the identified corridors.

Figure 6 **Sequencing logistics and transport investments in Kigali, Rwanda**



Multi-stakeholder governance to ensure consistency in investments

The government to stimulate private investment

At the national level, the **Ministry of Trade and Industry (MINICOM) plays a central role in coordinating industrial transformation. At the same time**, the Ministry of Infrastructure (MININFRA) provides the infrastructure needed for economic development. The Rwanda Development Board (RDB), for its part, promotes investment and implements strategic projects. The country's Industrial Policy 2024–2034 explicitly recognises that its implementation requires coordination among numerous ministries and agencies and provides for a governance framework linking MINICOM, RDB, MININFRA, MINECOFIN, and other institutions. The Industrial Development and Export Diversification Council (IDEC) provides strategic oversight and maintains a direct link to the government through the Office of the Prime Minister (MINICOM, 2024).

The private sector's significant investment capacity

This public coordination is accompanied by significant reliance **on specialised private operators and investors**. DP World operates the Kigali Logistics Platform under a 25-year concession; the Bugesera Special Economic Zone is being developed as a public-private partnership between the Rwandan government and ARISE IIP; and the new international airport now involves a partnership between Aviation Travel and Logistics Holdings and the Qatar Investment Authority, which has held a 60% stake in the project since 2026 (DP World, 2026; ARISE IIP, 2026; QIA, 2026). This diversity makes it possible to mobilise capital and technical expertise that the government cannot provide on its own. However, it also requires coordinating projects whose business models and timelines are not necessarily aligned.

Rwanda's SEZ policy reflects this quest to balance public impetus with private implementation. Where possible, it prioritises mobilising private investment to develop and operate infrastructure, while the public sector retains significant responsibilities for land use, utility connections, regulation, and project preparation.

The government sets guidelines and coordinates projects

Physical infrastructure connections must be matched by equivalent institutional coordination. A road project such as KLPConnect is not solely the responsibility of a transportation agency: it must integrate issues related to trade, logistics, standardisation, economic development, and the environment. The World Bank, in fact, considers the risk associated with institutional capacity and project sustainability to be "substantial."

Governance is thus a direct prerequisite for phasing. The infrastructure projects under consideration are not all progressing at the same pace: KLP and KSEZ are already operational; BSEZ is continuing its ramp-up; the airport is under construction; KLPConnect is being implemented; while the Ring Road and the rail project are still on a more distant timeline. Public capacity must therefore go beyond simply monitoring each project in isolation. It must make it possible to identify gaps between capacities and connections, to reorient investment priorities, and to anticipate the needs generated by the commissioning of new infrastructure.

The case of Kigali thus shows that investment phasing is as much a matter of institutional governance as of strategic planning.

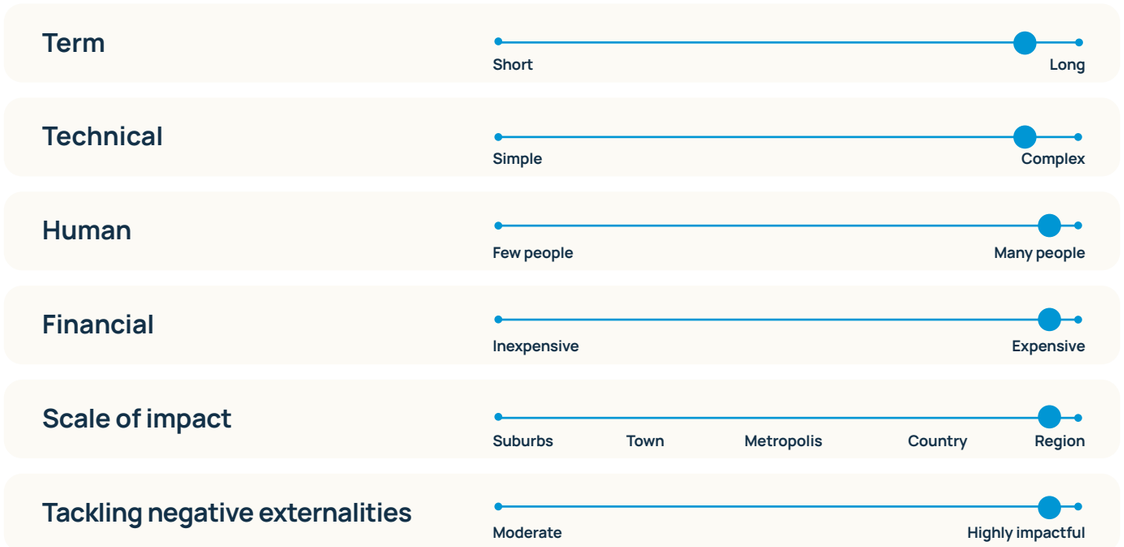
Long-term planning documents make it possible to anticipate future steps, but their coherence ultimately depends on institutions that can coordinate multiple levels of decision-making, various financing mechanisms, and both public and private investments. In a context of rapid development, coordination must remain flexible enough to adjust timelines and priorities in response to actual changes in traffic flows and demand.

Key learnings

Kigali illustrates how a logistics gateway can be built progressively through the coordinated development of complementary industrial, logistics and multimodal transport infrastructure. Rather than following a single predefined investment programme, projects with different timelines and sponsors are progressively aligned through long-term planning and cross-sector institutional coordination.

Kigali also highlights the importance of **long-term planning and institutional coordination across sectors and governance levels**. Aligning industrial, logistics, land-use and transport policies—and planning jointly for road, air and future rail connectivity—helps coordinate investments with different timelines, anticipate their interdependencies and preserve future infrastructure options as freight flows grow (City of Kigali, 2020; MINICOM, 2024).

Indicators



Other cases

Geography	Main relevance
Addis Ababa Modjo, Ethiopia	**Closest comparator to Kigali.** As a landlocked economy, Ethiopia has progressively combined the Modjo Dry Port, the Addis Ababa–Djibouti railway and road-corridor improvements to strengthen access to the Port of Djibouti. Modjo is evolving from an import-oriented inland terminal towards a broader logistics hub supporting manufacturing and exports. The case similarly illustrates the need to sequence logistics platforms, intermodal connections and corridor capacity rather than develop them as stand-alone assets (World Bank, 2017; 2026).
Naivasha Nairobi, Kenya	**Integration of logistics and industrial development along a transport corridor.** The extension of the Standard Gauge Railway from Mombasa has been accompanied by inland container depots in Nairobi and Naivasha and the development of the Naivasha SEZ, which combines an industrial park, logistics zone, rail marshalling facilities and an inland container depot. It provides a useful comparison for Kigali on how new transport capacity can structure industrial and logistics development inland from a maritime gateway (Kenya Ports Authority, 2026; SEZA, 2026).

7

Ahmedabad, India
Integrating Urban Logistics into Mobility and Land-Use Planning



Ahmedabad, India
Photo: Abhi Verma, Unsplash

From Fragmented Freight Management to Integrated Urban Logistics Planning

In September 2022, the Indian government launched the **National Logistics Policy** (NLP). The policy explicitly calls for the development of logistics plans at the state and city levels to improve the movement of people and goods and to reduce congestion, pollution, and logistics costs.

Consequently, the case of Ahmedabad can be viewed as the convergence of two dynamics:

- a well-established local and metropolitan dynamic
- a more recent and now structured national initiative, based on the 2022 National Logistics Policy and the national guidelines for City Logistics Plans.

Ahmedabad is a major hub for freight flows in the state of Gujarat. The city is located at the intersection of several road and rail corridors, and its logistical role is expected to grow further with the **Western Dedicated Freight Corridor** (a high-capacity rail freight corridor connecting Delhi to the ports of Gujarat, thereby relieving the conventional rail network of freight traffic). Industrial development in the outskirts—particularly around Sanand, Changodar, and other regional hubs—is also strengthening the flow of goods between the city, its metropolitan area, and the rest of Gujarat.

This increase in the flow and exchange of goods—and thus the resulting logistical function—takes place within a complex urban structure and against a backdrop of diminishing room for manoeuvre:

- Increasing density of industrial and commercial activities
- Concentration of major markets and historic commercial hubs in and around the old city
- Limited road space and constraints
- Insufficient parking dedicated to freight vehicles in most major freight-generating hubs,
- Heavy truck traffic conflicting with passenger travel and local road use

The Sustainable Urban Mobility Plan (SUMP) for Greater Ahmedabad, developed between 2021 and 2023 under the MobiliseYourCity initiative with a planning horizon of 2041, marks a shift in approach. Through its dedicated urban freight component, aligned with the principles of a **Sustainable Urban Logistics Plan** (SULP), it moves beyond ad hoc traffic restrictions to integrate freight into mobility policies, land-use planning, road management and decarbonisation strategies. Improving freight efficiency and reducing its externalities is thus identified as one of the SUMP's seven strategic priorities (MobiliseYourCity, 2026).

The Logistics Component of Ahmedabad's SUMP: *Content and Rationale for Action*

An "Integrated SULP" within the metropolitan SUMP

The SUMP covers the Greater Ahmedabad Region, including Ahmedabad and Gandhinagar. It was developed with support from MobiliseYourCity, as part of a technical assistance project funded by the European Union and implemented by AFD. The Ahmedabad Municipal Corporation (AMC) served as the local institutional partner. The process began in late 2018, and the SUMP was completed in 2023. It is now in the process of being officially adopted.

More specifically, the freight component of the Sustainable Urban Mobility Plan (SUMP) for Greater Ahmedabad is structured around six complementary areas of action:

- **Integration into urban and land-use planning:** Freight requirements are to be incorporated into planning documents and street design, including the provision of dedicated space and infrastructure for logistics operations.
- **Development of a freight master plan:** The SUMP calls for a dedicated freight master plan to translate its strategic objectives into coordinated and operational measures at the metropolitan level. This would provide a more detailed framework for implementing the urban freight strategy.
- **Freight flow and traffic management:** The plan proposes measures to improve freight vehicle routing and traffic management, supporting safer and more efficient goods movements across the city.
- **Freight data collection and management:** The SUMP emphasises the collection, integration and validation of freight-related data from multiple sources to improve understanding of logistics activities and support evidence-based decision-making.
- **Governance and stakeholder coordination:** The plan calls for stronger coordination mechanisms between public authorities, logistics operators, merchants and other stakeholders to facilitate the planning and implementation of freight measures.
- **Fleet electrification and decarbonisation:** The SUMP also addresses the environmental impacts of urban logistics through measures supporting cleaner freight vehicles, including electrification.

The added value of Ahmedabad's approach lies in the combination of these complementary measures within a single mobility planning framework. By linking freight management with land-use planning, infrastructure, data, governance and vehicle technology, the SUMP provides an integrated framework for addressing urban logistics challenges (MobiliseYourCity, 2025).

Ahmedabad City Logistics Plan: *building on the SUMP / SULP*

This approach builds on earlier land-use planning initiatives. The Revised Development Plan 2021, approved in 2014 by the Ahmedabad Urban Development Authority (AUDA), had already designated land for logistics activities and recommended the preparation of a Comprehensive Freight Movement Plan. This proposed plan aimed to distinguish local from regional freight traffic and establish dedicated routes, operating schedules and parking regulations (AUDA, 2014).

More recently, the Ahmedabad City Logistics Plan (CLP), released in June 2026, introduced a more detailed and investment-oriented framework for freight infrastructure and operations. Covering Ahmedabad and its wider metropolitan region, the CLP is aligned with India's National Logistics Policy and PM Gati Shakti National Master Plan. It proposes a three-tier logistics system comprising:

- **Peripheral logistics facilities**, including a multimodal logistics park and a Transport Nagar, to accommodate major freight activities outside the urban core;
- **Urban Logistics Consolidation and Distribution Centres** (ULCDCs) to organise freight distribution within the city;
- **Micro Delivery Hubs**, supporting last-mile distribution through smaller and electric vehicles.

The CLP sets out an infrastructure programme including one multimodal logistics park, five urban consolidation and distribution centres, 14 micro-delivery hubs, 13 logistics parking areas with a combined capacity of 6,352 vehicles, 18 warehouses and 29 cold-storage facilities. It also proposes road and traffic management improvements, including bypass roads, dedicated freight lanes, a regional ring road and intelligent transport systems. Environmental measures include the introduction of a Low Emission Zone and the development of charging infrastructure for electric freight vehicles.

The proposed investment programme amounts to **INR 123.15 billion (approximately EUR 1.14 billion**, with implementation envisaged in three phases: 2025–2030, 2030–2035 and 2035–2047. The Ahmedabad Municipal Corporation (AMC), AUDA, the Government of Gujarat and the National Highways Authority of India (NHAI) are expected to participate in implementation, alongside private investment through public-private partnerships (DeshGujarat, 2026).

The 2026 CLP should be distinguished from the freight component of the Sustainable Urban Mobility Plan (SUMP) for Greater Ahmedabad. While the SUMP provides an integrated mobility planning framework, the CLP sets out a more detailed programme of logistics infrastructure and investments. Together with the earlier development plan, these documents illustrate the progressive integration of freight into metropolitan land-use and transport planning. However, the available information does not establish a formal institutional relationship between the CLP and the freight master plan envisaged under the SUMP.

Institutional Organization

Urban freight planning in Ahmedabad involves several institutions operating at municipal, metropolitan, state and national levels. The governance arrangements of the Sustainable Urban Mobility Plan (SUMP) for Greater Ahmedabad and the Ahmedabad City Logistics Plan (CLP), released in 2026, should nevertheless be distinguished.

Public and institutional stakeholders.
The Ahmedabad Municipal Corporation (AMC) and Ahmedabad Urban Development Authority (AUDA) were the main local counterparts for the preparation of the SUMP. While AMC coordinates municipal mobility services, AUDA is responsible for urban development planning and plays a key role in integrating transport and logistics infrastructure with land-use planning. The SUMP covers the wider Greater Ahmedabad Study Region, including areas under the Gandhinagar Municipal Corporation (GMC) and Gandhinagar Urban Development Authority (GUDA), making metropolitan coordination necessary (CEPT Research and Development Foundation, n.d.; MobiliseYourCity, 2026).

Private-sector and logistics stakeholders.
Freight planning also requires engagement with carriers, warehouse operators, retailers, wholesale markets, manufacturers and other freight generators. Their participation is particularly important for collecting reliable logistics data and designing operationally feasible freight regulations. Although the SUMP preparation process included stakeholder consultations, the available documentation does not establish the extent to which freight operators, particularly informal and small-scale operators, were represented (CEPT Research and Development Foundation, 2022).

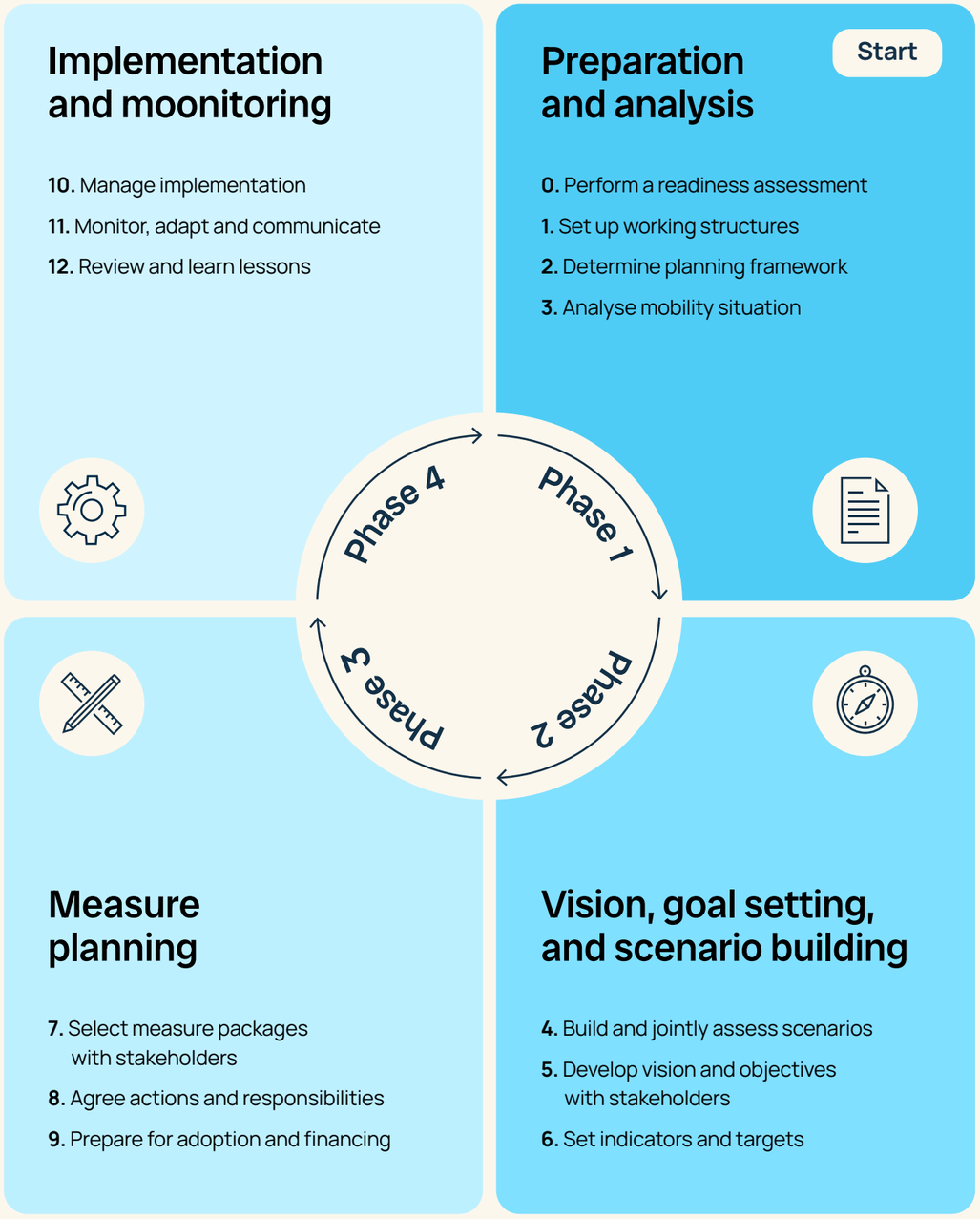
Technical and academic partners.
The SUMP was developed with support from the French Development Agency (AFD) under the MobiliseYourCity initiative. Technical assistance was provided by a consortium including Transitec, Suez Consulting and Des Villes et Des Hommes (DVDH), in collaboration with the Centre of Excellence in Urban Transport at CEPT University. This support also included the development of an Urban Mobility Observatory to monitor mobility indicators and progress in SUMP implementation (Transitec, 2022; MobiliseYourCity, 2023).

Coordination and implementation arrangements.
The SUMP preparation process involved a steering structure led by AMC and consultations with metropolitan transport and planning institutions. However, it did not establish a permanent municipal unit dedicated exclusively to urban freight. The broader metropolitan mobility framework identifies the need for a Unified Metropolitan Transport Authority (UMTA) and dedicated funding mechanisms to address coordination and financing gaps across institutions (MobiliseYourCity, 2026).

The implementation framework of **the 2026 City Logistics Plan (CLP)** is distinct from that of the SUMP. Under Gujarat's logistics policy, a City Logistics Coordination Committee has been established in Ahmedabad to support freight planning, stakeholder coordination and the monitoring of city logistics measures. This committee operates within a wider state-level framework coordinated through the Gujarat Infrastructure Development Board (GIDB) and its State Logistics Cell. The CLP also identifies AMC, AUDA, the Government of Gujarat and the National Highways Authority of India (NHAI) as implementation stakeholders, with private-sector participation envisaged through public-private partnerships. While this provides an institutional basis for implementation and monitoring, the specific allocation of responsibilities and monitoring arrangements for individual CLP investments remains to be clarified (GIDB, 2023; DeshGujarat, 2026).

Overall, Ahmedabad illustrates the potential of integrating urban freight into metropolitan mobility and land-use planning, while highlighting the institutional challenges associated with implementation across multiple jurisdictions. The effectiveness of this approach will depend on clear responsibilities, sustained coordination between public authorities and logistics operators, and dedicated monitoring and financing arrangements.

Figure 7 **The 4 Phases of a Planning**



Main Findings from the Ahmedabad Case Study

Urban freight challenges are closely linked to land-use planning.

Ahmedabad's freight challenges reflect long-term spatial changes, including urban expansion around former peripheral industrial areas, the concentration of wholesale markets in the historic centre, and insufficient space for freight parking and handling. Earlier studies showed that restrictions on heavy vehicle access could generate additional waiting and parking near markets without addressing these structural constraints (Swamy and Baindur, 2014). The SUMP responds to these issues by integrating freight into metropolitan mobility and land-use planning, rather than relying solely on traffic regulations (MobiliseYourCity, 2025).

Urban freight planning is increasingly supported by national and state-level logistics policies.

Ahmedabad's approach is embedded in a wider policy framework established by India's National Logistics Policy, the PM GatiShakti National Master Plan and Gujarat's Integrated Logistics and Logistics Park Policy 2021. These frameworks provide strategic direction for logistics infrastructure, efficiency and institutional coordination.

The publication of Ahmedabad's City Logistics Plan (CLP) in 2026 illustrates how these objectives are being translated into more detailed metropolitan logistics planning, although a formal institutional link between the CLP and the SUMP has not been established (Government of Gujarat, 2021; Government of India, 2022; DeshGujarat, 2026).

Technical assistance and institutional coordination have helped integrate freight into mobility planning.

The preparation of Ahmedabad's SUMP benefited from external technical assistance, academic expertise and coordination between municipal and metropolitan institutions. Earlier freight research also demonstrated the value of combining existing administrative records, traffic surveys and field observations to better understand freight-generating activities (Swamy and Baindur, 2014). However, the SUMP did not establish a permanent municipal unit dedicated specifically to freight, and the extent of participation by small-scale and informal logistics operators remains unclear (MobiliseYourCity, 2026).

Moving from strategic planning to implementation remains a lengthy and institutionally demanding process.

Ahmedabad's SUMP was finalised in 2023 but had not been formally adopted according to MobiliseYourCity's 2026 assessment. The publication of the CLP in June 2026 represents a further step towards detailed infrastructure and investment planning, including a phased programme extending to 2047. However, the relationship between the two documents, the implementation status of individual investments and the arrangements for monitoring their outcomes remain insufficiently documented (MobiliseYourCity, 2026; DeshGujarat, 2026).

Key learnings

Integrate urban freight into mobility and land-use planning, supported by a dedicated operational plan.

Urban freight should be addressed as a component of the wider urban system rather than exclusively through traffic restrictions. Integrating freight into the Sustainable Urban Mobility Plan (SUMP) can ensure consistency with land-use, infrastructure and environmental objectives. A dedicated Sustainable Urban Logistics Plan (SULP), or equivalent freight master plan, can then translate these priorities into specific measures, responsibilities and investment programmes. The two planning levels should be complementary rather than disconnected.

Build on national frameworks while allowing cities to initiate action.

National and regional logistics policies can provide strategic direction, technical support and institutional coordination mechanisms for city-level initiatives. However, cities do not need to wait for a comprehensive national framework to address urban freight. Municipal transport and planning authorities can initiate targeted measures within their existing mandates, combining regulations—such as access and parking restrictions—with enabling investments, including loading areas, logistics facilities and cleaner vehicle infrastructure.

Develop institutional capacity progressively before committing to major investments.

Limited freight data and a lack of specialised municipal expertise should not prevent cities from initiating logistics planning. A practical starting point is to designate an institutional focal point, mobilise external technical expertise, engage freight operators and consolidate available data through targeted surveys and existing administrative sources. This progressive approach can help identify priority needs and ensure that proposed infrastructure responds to actual freight flows, land availability and viable operating models.

Anticipate long planning and implementation timelines.

Integrating freight into urban planning requires sustained coordination across institutions, successive planning stages and dedicated financial resources. Cities should anticipate the time needed for technical studies, stakeholder consultations, formal adoption, operational planning and investment mobilisation. Early actions, such as freight data collection, loading-space management and targeted regulatory improvements, can be implemented alongside the preparation of longer-term infrastructure programmes. Clear responsibilities, financing mechanisms and monitoring arrangements are essential to maintain continuity between planning and implementation.

Indicators



Other cases

Geography	Main relevance
Antofagasta Chile	The SUMP combines the planning of a logistics hub, spatial and scheduling regulations for heavy-duty vehicles, the creation of loading zones, and improvements to the last mile. In particular, this case addresses the constraints related to the interface between port activities, heavy-duty vehicle traffic, and urban operations.
Douala Cameroon	The SUMP explicitly addresses the separation of transit and urban traffic flows, heavy-duty vehicle parking, logistics hubs, and the formalization of certain activities. This approach responds to a situation in which long-distance traffic flows linked to national and regional corridors overlap with distribution needs within the metropolitan area (MobiliseYourCity, 2025b).
Trujillo Peru	The SUMP places greater emphasis on governance and regulation, with the establishment of an institutional framework for freight, route optimization, land-use regulations, and enforcement mechanisms. It thus illustrates an approach in which the structuring of public responsibilities and rules applicable to freight serves as a prerequisite for more operational interventions (MobiliseYourCity, 2025a).
India	**The national guidelines for City Logistics Plans** propose a structured approach that includes the assessment of logistics chains, data collection, consultation with the private sector, inter-institutional coordination, and the definition of a portfolio of interventions. For large functional metropolitan areas, they also emphasize the need to coordinate multiple local authorities and specifically recommend the use of Freight Quality Partnerships (DPIIT, 2025).



Kuala Lumpur, Malaysia
Photo: Silver Ringvee, Unsplash

8

Klang Valley, Malaysia
Consolidating freight and passenger transport

Context – the need for solutions amid growing flows

The Klang Valley, the metropolitan area structured around Kuala Lumpur, concentrates growing flows of passenger mobility, urban deliveries and e-commerce. The rise of small-parcel deliveries, driven by online retail, digital platforms and expectations of rapid delivery, intensifies short-distance flows within the urban area. These flows are fragmented, numerous and difficult to consolidate, increasing pressure on the road network.

Beyond reducing the number of vehicles, efforts to address road congestion and transport-related emissions can also rely on better use of residual capacity in transport modes that already operate along major urban corridors.

In this perspective, two complementary solutions can be identified:

- the Rapid KL LRT network, which can support consolidated freight movement through mass transit infrastructure at metropolitan scale;
- ride-hailing and platform-based services, which can support flexible small-parcel logistics through distributed vehicles and drivers, particularly over short distances.

The case therefore illustrates two approaches to freight–passenger mutualisation within existing urban transport modes: a structured mass-transit model and a lighter platform-based model.

Consolidating freight and passenger transport – Mass transit

The Klang Valley provides an emerging example of freight–passenger complementarity using mass transit infrastructure for small-parcel logistics.

Diolko–Prasarana model overview

The Diolko–Prasarana model is an urban logistics initiative that uses the Light Rail Transit (LRT) network in the Klang Valley, around Kuala Lumpur, to transport parcels outside peak passenger demand periods. The system relies on temporal complementarity: the LRT remains primarily a passenger transport service, while goods move after 11 p.m. to avoid disrupting passenger operations. Diolko Logistics Malaysia Sdn Bhd leads the project in collaboration with Prasarana Malaysia Berhad, the public operator of the Rapid KL network. It began as a pilot in July 2024 and continued beyond the initial trial phase (Bernama, 2024; Lew, 2025).

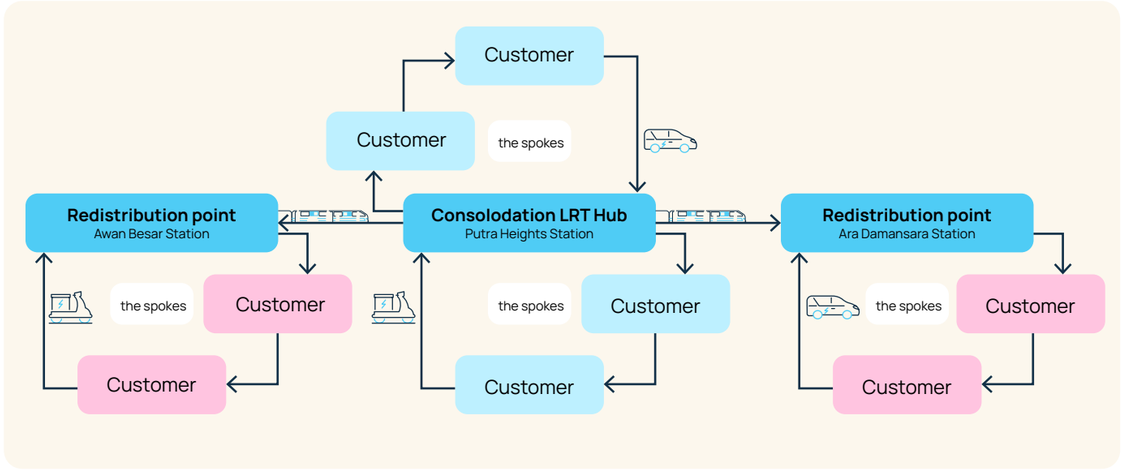
Operating model: *leveraging rail infrastructure*

The model functions as a hub-and-spoke logistics chain, combining LRT, electric vehicles and station-based micro-hubs. In a hub-and-spoke structure, flows pass through one or more central hubs where they are consolidated, sorted and redistributed. The model mainly concerns light parcels, generally up to 3 kg, linked to urban delivery and e-commerce.

Electric vans or electric motorcycles first collect parcels from clients, then bring them to Putra Heights station, which serves as the main hub. Parcels are sorted by destination and loaded into handling trolleys specifically designed for rail use. Diolko staff accompany or supervise these trolleys on board. After the LRT journey, parcels are collected at destination stations and delivered by electric vans or electric motorcycles. The LRT therefore provides the structuring middle-mile segment between stations, while electric vans and electric motorcycles cover the short, last-mile road-based segments: collection and final delivery.

The initial system is based on three stations. Putra Heights acts as the main consolidation, sorting and loading hub, while Awan Besar and Ara Damansara function as redistribution stations. The model is designed to prevent delivery vehicles from crossing the entire metropolitan area by moving parcels closer to their destination areas through the existing rail network.

Figure 8 **Diolko hub-and-spoke model: LRT-integrated urban parcel delivery**



Spatial and temporal separation of flows

The central operating principle is to separate passenger and freight uses in space and time. Parcels are transported after 11 p.m., outside peak periods and when passenger demand is low, in order not to disrupt passenger services. Passengers are not allowed in the same space during delivery operations, both in stations and on trains. Stations also include handling areas located away from passenger flows.

Trolleys must be loaded onto the train within 30 seconds. If the team cannot meet this time, it waits for the next train to maintain regular passenger service.



The LRT compartment reserved for freight
Photo: Business Today, November 16, 2024

Model promoters and institutional roles

The model is based on a public–private partnership:

01

Diolko Logistics Malaysia manages the logistics operation: collection, sorting, trolley management, flow organisation, electric vehicles, final delivery and client relations. The company positions itself as a sustainable last-mile delivery operator.

02

Prasarana Malaysia Berhad provides access to public transport infrastructure: stations, the LRT network and operational access conditions. The selected stations become multifunctional hubs.

03

The Ministry of Transport provides political and regulatory support. The ministry supports the project on regulatory aspects and sees it as a contribution to the green transition and more efficient use of public rail assets.

Model objectives

The project pursues four main objectives. First, it seeks to reduce emissions by combining urban rail and electric vehicles, thereby reducing dependence on internal-combustion vans in the city. Diolko and Prasarana report an expected 70% emissions reduction compared with a conventional road-based model. Second, the Ministry of Transport explicitly presents the project as a response to congestion and emissions generated by road freight transport. Third, the model aims to optimise existing public infrastructure and corridors, as it does not require new heavy logistics infrastructure. Fourth, it seeks to create a new non-fare revenue stream for the public operator while supporting private logistics innovation.

Planned development

Diolko was reportedly operating at 2,500 parcels per month in December 2024, with a target of 75,000 parcels per month within six months as the network scales up. The announced objective is to reach 15 transit stations in the Klang Valley by 2027. Strategic perspectives include expansion to other Malaysian cities and potentially across ASEAN, including cross-border opportunities such as the Johor Bahru–Singapore connection.

Replicability for other Global South cities

The main replication condition is to proceed in stages. First, assess logistics demand and determine whether one or more stations can serve it. The second step is to verify whether these stations can evolve into operational hubs. These stages should be embedded in a coherent consolidation strategy that treats selected stations as genuine consolidation centres within a wider network.

Not all stations should be considered potential hubs. The model depends on careful selection: available space, accessibility for delivery staff, limited conflicts with passengers, capacity to organise handling operations, safety, the presence of an experienced logistics operator and support from the public transport authority.

Consolidating freight and passenger transport – small-volume logistics through platform-based services

Beyond the LRT-based model, the Klang Valley also illustrates a lighter form of freight–passenger complementarity through platform-based services. Rather than relying on fixed infrastructure, this model uses available vehicle and driver capacity across the urban mobility ecosystem.

GrabExpress is a relevant example: cars and motorcycles can be allocated to parcel delivery when demand, location, and driver availability allow. This represents a form of available-time mutualisation, more flexible but less institutionally structured than the LRT model.

The available-time mutualisation model

Available-time mutualisation involves temporarily assigning a driver and vehicle to delivery tasks when demand for other services is lower, or when they have time between trips. It is therefore a form of mutualisation based on inactivity periods or lower-demand windows. For example, a driver may transport passengers during high-demand periods, then accept a parcel delivery when passenger demand decreases.

This is not an institutional mutualisation model comparable to the Diolko–Prasarana LRT case, where defined operating windows separate passenger and parcel transport. Formally scheduled models based on passenger transport during peak periods and parcel delivery during off-peak periods remain rare.

Grab – a platform combining passenger transport and freight

Grab is a Southeast Asian mobile app that combines passenger mobility, parcel delivery, food delivery, shopping services and digital payments within a single platform-based ecosystem. Grab's model in Malaysia is an integrated platform that combines passenger mobility (GrabCar and GrabTaxi) with food delivery (GrabFood), grocery delivery (GrabMart), and parcel delivery (GrabExpress).

GrabExpress is an on-demand delivery service used to send documents, parcels and small goods. It provides real-time GPS tracking, photo proof of delivery, digital payment and instant, scheduled or four-hour delivery options. GrabExpress was tested in Malaysia from 2018 in selected areas of the Klang Valley, then extended to the Greater Klang Valley in February 2019.

Operational functioning of the delivery service

The customer books a delivery in the application, indicating the pick-up point, delivery point and recipient information. The platform then assigns the task to an available delivery partner. Delivery tracking is provided in real time.
The service can cover items from 500 g to 100 kg, depending on the vehicle type selected:

- motorcycles are used for urgent deliveries of documents, packaged food and small items;
- cars are used for more fragile or larger items, such as cakes, flowers or goods requiring more space;
- multi-purpose vehicles are used for small appliances, furniture and bulkier goods.

In 2020, Grab launched a more economical 4-Hour Delivery option in the Klang Valley, initially available between 12 p.m. and 4 p.m. This reflects a logic of non-urgent deliveries concentrated in a less constrained time window, although it is not presented as a systematic off-peak freight policy. A car driver registered on the platform can therefore receive delivery requests in addition to passenger rides. By contrast, motorcycles cannot be considered a full passenger–freight mutualisation model in Malaysia, because motorcycle ride-hailing remains prohibited or heavily constrained.

Why the platform is an example of logistics–passenger mutualisation

GrabExpress in Malaysia illustrates platform-based logistics mutualisation rather than planned institutional mutualisation between passengers and goods. Motorcycles provide rapid delivery for small parcels and documents, while cars and multi-purpose vehicles can transport larger or more fragile goods. Drivers and delivery partners operate through the Grab application, with dynamic task allocation, GPS tracking, digital payment and proof of delivery.

The model creates partial complementarity with passenger transport, especially for GrabCar drivers, who can become eligible for GrabExpress delivery tasks after a short training process. Informal logistics practices can also involve passenger–freight mutualisation, but these are less structured and more difficult to document.

GrabExpress regulatory framing is fragmented. Passenger e-hailing is regulated under transport rules, while parcel delivery is mainly governed through platform terms, general road-safety rules, consumer protection provisions and emerging gig-worker protections. Unlike the Diolko–Prasarana LRT model, GrabExpress does not appear to be framed by a dedicated public policy for urban freight consolidation or peak/off-peak freight–passenger mutualisation.

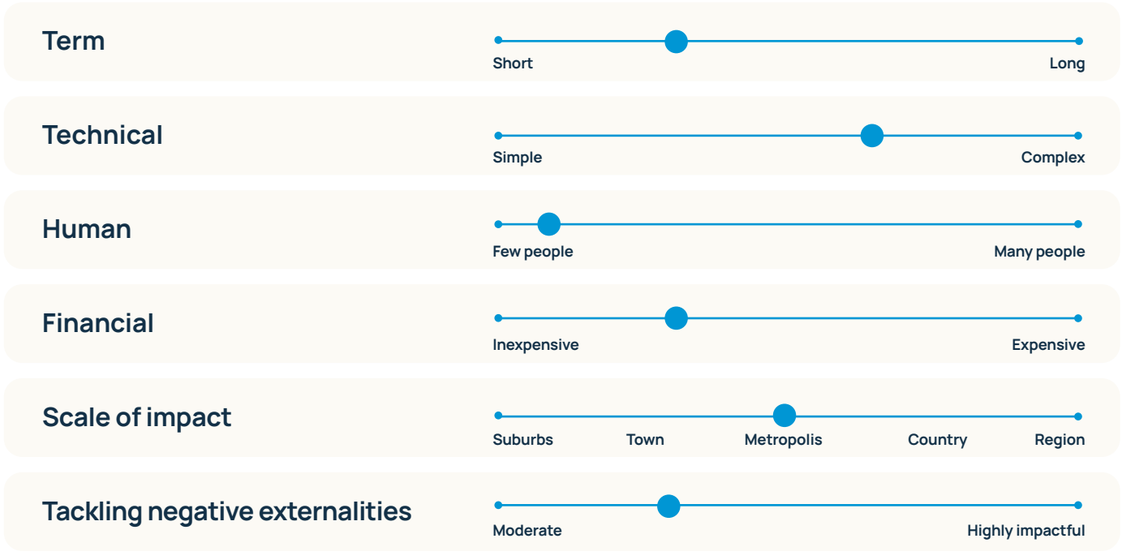
GrabExpress shows the potential of platform-based mutualisation, but it should not be treated as self-regulating urban logistics. Integrating it into public policy would require clearer data-sharing obligations, worker-protection standards, road-safety requirements, and coordination with curbside and low-emission freight policies.

Key learnings

The Klang Valley case shows that freight–passenger complementarity can take two distinct but complementary forms. The Diolko–Prasarana LRT model illustrates a structured form of time-shifted mutualisation. This model requires strict operational conditions. In parallel, GrabExpress represents a lighter platform-based model, where cars and motorcycles can be mobilised flexibly for parcel delivery within the same digital mobility ecosystem, although without a formal peak/off-peak separation.

Consolidating freight and passenger transport is feasible at different scale and nature of the freight flow. Mass transit can support consolidated, small-volume flows along fixed corridors, while platform-based vehicles are better suited to dispersed first- and last-mile movements.

Indicators



Other cases

Geography	Main relevance
Bangkok Thailand	**BTS Skytrain** — Parcel transport using public transport infrastructure. Operational service launched in 2019, but available evidence does not confirm a durable off-peak freight model.
Delhi India	**Metro** — Early deployment/trials since 2025. One of the most direct Indian examples of using metro capacity for urban cargo, but still too recent to assess long-term performance.
Kochi, India	**Metro** — Freight service announced in 2025. Relevant as an emerging case, but not yet a mature or fully assessed implementation.
Beijing / Shanghai China	**Metro** — Operational pilots using metro systems for parcels, with stronger technical evidence than most other cases. China should be treated separately depending on the definition of “Global South” used in the study.
Rio de Janeiro Brazil	**BRT** — Feasibility study on using BRT as a logistics platform. Useful scientific reference, but not an implemented system.
Nairobi Kenya **Kigali** Rwanda	**Motorcycle taxis and digital platforms** — Useful case for illustrating light, platform-based mutualisation between passenger transport, parcel delivery and micro-logistics. No formal peak/off-peak separation, but strong operational polyvalence of motorcycles and platform services in Global South cities.



Bangkok, Thailand
Photo: Sujira Su, Pexels

9

Thailand
Optimising construction logistics

Context - Construction logistics

Construction logistics has become a key but still under-addressed dimension of urban freight planning in Thailand. The country's construction sector is being supported by major public infrastructure programmes, with total construction spending reaching THB 1,407.5 billion in 2024 and public-sector construction accounting for a substantial share of this activity (Krungsri Research, 2025). This generates high demand for materials (cement, aggregates, steel, concrete, ...), which in turn leads to heavy flows of time-sensitive heavy goods vehicles through already congested urban corridors, particularly in Bangkok, where rapid urbanisation, limited road infrastructure and high car ownership continue to put pressure on the transport system (Asian Transport Observatory, 2024). Thailand's strong dependence on road freight, which carries almost 80% of domestic freight volume, strengthens the challenge (Krungsri Research, 2024). In this context, optimising construction logistics is not only about improving contractor efficiency. It is also a broader urban mobility and sustainability issue, requiring better coordination of deliveries, routing, site access, consolidation opportunities and scheduling for time-critical materials such as ready-mixed concrete (Srichandum & Rujirayanyong, 2010; Muerza et al., 2021). It therefore provides a relevant case study for examining how cities in South-East Asia can integrate construction-related freight into urban mobility planning and offer a framework or process to follow, rather than treating it as a purely operational matter for the private sector.

SCG Logistics optimisation - Backhaul matching model

Presentation of Siam Cement Group

SCG Logistics Management Co., Ltd. (SCG-L), the logistics arm historically linked to Siam Cement Group (SCG), developed a backhaul matching model to improve the efficiency of construction-material distribution in Thailand. The model was applied in particular to cement and building materials flows serving the Northeastern region, where SCG Cement sought to expand market coverage while maintaining competitive logistics costs.

The aim of the model: *reduce empty mileage by using backhaul*

The model's operational logic is straightforward: it seeks to turn **an unproductive return trip into a commercially useful movement**. In SCG's case, the **headhaul** refers to the main outbound flow from the factory, typically cement or construction materials moving from SCG plants, hubs or distribution points to regional customers. The **backhaul** refers to the return leg, where the same truck is loaded with another cargo instead of returning empty. The objective is to reduce empty mileage, increase truck utilisation, reduce logistics costs, and support market expansion.

Matching process

The matching process depends on several operational criteria. A backhaul load is suitable only if:

- The truck type is compatible with the cargo,
- The residual empty distance to the backhaul loading point is acceptable,
- The pickup window fits the truck's schedule,
- The return destination allows the vehicle to re-enter the next headhaul cycle on time.

Adaptation of the model

In the SCG case, cement delivery created a contamination risk for some return cargoes, so we introduced fast truck-cleaning operations after headhaul delivery. SCG-L identified two main causes of failed matching in the Northeastern region: **truck mismatch** and **scheduling problems**. Countermeasures included using backhaul customer demand to plan truck supply, improving truck cleaning, and reorganising regional operations around **hubs and cross-docking facilities.**

Regional hub: *the key to the success of this model*

The infrastructure layer is central to the model. SCG-L used a **regional hub** to smooth regular headhaul operations and facilitate the rapid unloading of cement. This reduced truck waiting time and made vehicles available more predictably for backhaul assignments. The company also used an **Export Service Centre (ESC)** as a cross-docking facility, allowing backhaul cargo to be stored briefly before export. This helped reduce port congestion and enabled trucks to return in time for their next headhaul schedule.

Backhaul destinations

Once loaded with backhaul cargo, trucks may follow three types of return patterns.

01

The first, and most structurally aligned with the model, is a loaded return towards the cement plant, the headhaul plant area, or another location that allows the truck to re-enter SCG's next outbound delivery cycle.

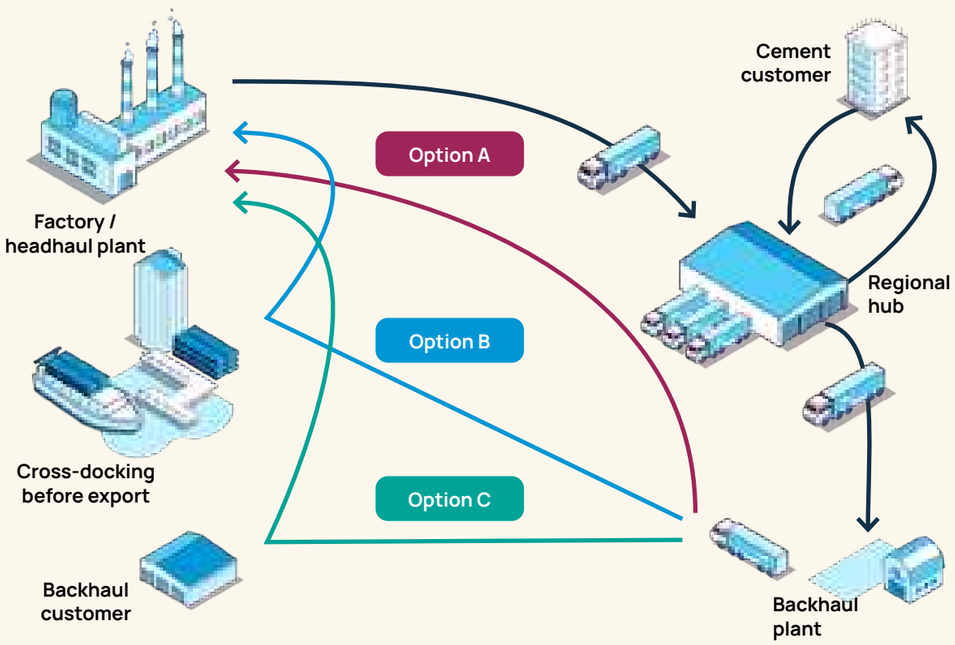
02

The second is a movement via the Export Service Centre, especially where the return cargo is linked to export flows

03

The third, less common, is a direct delivery to the backhaul customer's destination when the route and schedule are compatible.

Figure 9 **Backhaul destination options in the SCG delivery cycle**



Link between construction logistics and regional agricultural production

The broader category of return freight is agricultural products, with SCG's operational diagram referring to "backhaul plants (Agriculture)" as loading points. The most clearly documented return cargo in the SCG case is the "bagged cement – bagged sugar" loop. This cargo mix links construction logistics with regional agricultural production, creating a more balanced freight system between industrial supply chains and rural production areas.

Specificity of Siam Cement Group case

Backhaul matching is a well-known logistics practice used globally to address the structural imbalance between outbound and return freight flows. What is specific to SCG is the level of operational integration. SCG did not treat the model as an occasional search for return freight, but as a structured daily management process embedded in a large industrial logistics network, supported by transport planning systems, regional hubs, carrier coordination, cleaning procedures, and cross-docking infrastructure. This strong governance role is a key feature of the case: SCG actively frames and coordinates the system rather than leaving matching to ad hoc market arrangements. This more interventionist approach helps make flows more predictable, improves vehicle utilisation, and creates value for both SCG and its private logistics partners.

The SCG-L network development

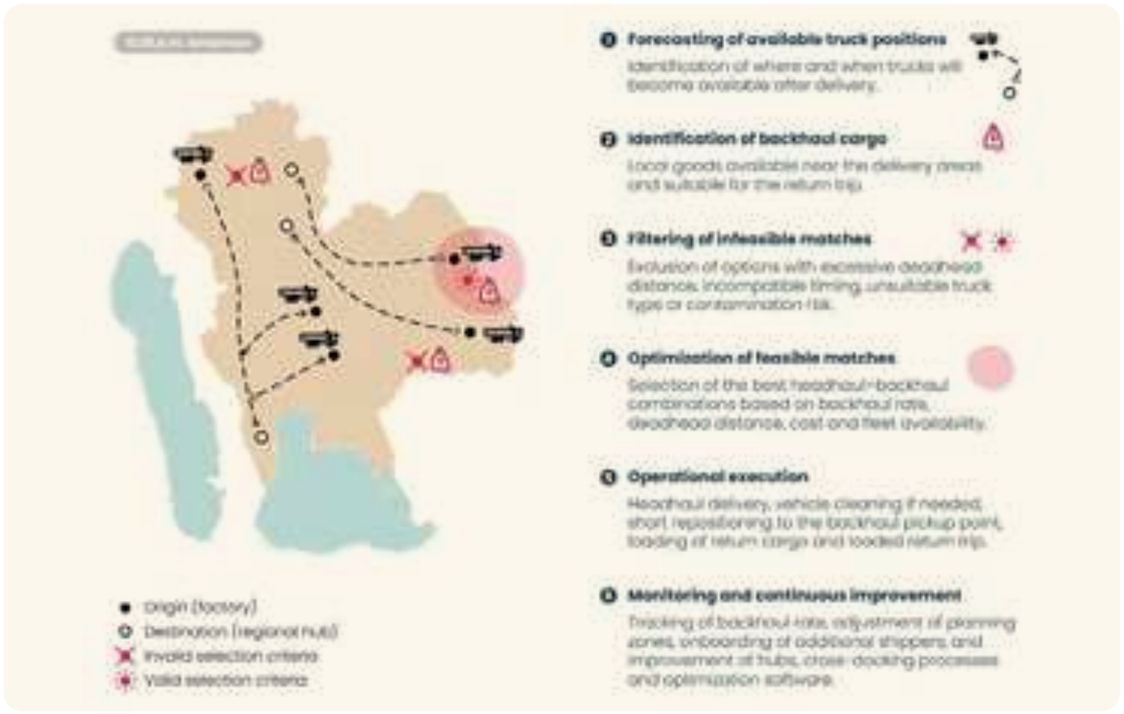
The scale of SCG-L's network made this model particularly relevant. In 2013, SCG-L reported **6,900 trucks, 250 barges, 37 hubs/warehouses, 14 ports, 370 carriers** (including 65 core carriers), and **93 customers** across **nine business segments** (SCG Logistics Management, 2013). More recent information points to an enlarged platform, with total fleet capacity of **14,000 trucks**, barge capability of **220 barges, 2.3 million m²** of warehouse and yard area, and **2,400 customers** (SCG Vietnam, 2026). In the original SCG-L case, the optimisation effort was primarily driven by economic objectives: SCG Cement sought to expand its market in the Northeastern region while keeping logistics costs competitive. Backhaul matching was therefore introduced to improve truck utilisation, reduce empty running, and support market growth. More recently, SCGJWD has also reframed the model through its climate agenda: the JUMP+ Plan 2026–2028 identifies backhaul matching, multimodal shift, and route optimisation as energy-efficiency measures within its climate action plan (SCGJWD, 2026). The case therefore shows that economic and climate objectives can reinforce each other: the same measures that reduce transport costs and improve asset productivity can also reduce fuel consumption and emissions.

Key learnings

SCG's backhaul matching model shows that construction-logistics optimisation requires more than a digital routing tool. Its effectiveness depends on a complete operating model combining stable outbound construction-material flows, compatible return cargo, trusted carrier partnerships, disciplined scheduling, regional hubs and cross-docking capacity. In the SCG case, the model worked because regular cement and construction-material deliveries could be matched with agricultural products.

The main lesson for other emerging-market contexts is that backhaul matching can address common freight inefficiencies such as empty truck movements and fragmented carrier capacity. Its replication should be phased: start with one anchor corridor, a predictable outbound flow, a limited number of reliable return shippers and simple indicators such as backhaul rate, empty kilometres, fuel savings and on-time truck availability. Once stabilised, the model can be expanded to additional zones, cargo types and, where infrastructure allows, multimodal logistics involving road, barge, rail, warehousing and port nodes.

Figure 10 **Simplified functional diagrams**



Indicators



Other cases

Geography	Main relevance
Barcelona, Spain Barcelona, Spain	Barcelona has used multi-use lanes that change function during the day: priority bus lane at peak times, loading space during off-peak periods, and residential parking at night. The city has also been cited for requiring off-street delivery or storage areas in new buildings above certain floor-area thresholds in new commercial, industrial or service buildings.
London United Kingdom	The LCCC pilot was established in 2005 in South Bermondsey to serve London construction sites. Its purpose was to reduce direct deliveries to sites, congestion and vehicle emissions. WRAP reports that CCC-type solutions can reduce freight traffic to site by up to 70%, improve productivity and reduce waste through better handling and just-in-time deliveries.
Paris France	The Grand Paris Express project generates major flows in both directions: outbound flows of excavated material, estimated at around 45 million tonnes, and inbound flows of construction inputs such as tunnel segments, rails and sleepers (VNF). Rather than relying only on road transport, the logistics strategy seeks to use river, rail and road connections to move heavy and bulky materials more efficiently. In this context, HAROPA PORT presents Port Seine-Métropole Ouest as a future multimodal platform designed to handle raw and prefabricated construction materials, combining waterway, rail and road access. The case is therefore relevant as an example of construction logistics management based on dedicated nodes, modal shift and the spatial organisation of heavy flows before they enter dense urban areas.

10

New York City, USA
Setting up a municipal freight unit

New York City, USA: setting up a municipal freight unit



New York
Photo: Helenalopes, Pexels

From fragmented responsibilities to dedicated municipal capacity

Private actors largely deliver urban logistics. However, it produces significant public impacts: congestion, road safety risks, air pollution and greenhouse gas emissions, noise, and persistent conflicts over curb space. In most cities, the public levers that shape freight operations are scattered across departments and agencies (transport, street management, enforcement, environment, land-use planning, economic development). This fragmentation often leads to inconsistent rules, weak operational coordination, and limited capacity to sustain structured dialogue with carriers and receivers.

A dedicated municipal freight unit helps close this gap by creating a single institutional focal point that can coordinate measures internally and engage the sector continuously.

Dedicated freight units remain uncommon globally, not only in the Global South. They are most often found in very large metropolitan administrations where freight volumes, curb pressure and regulatory complexity justify specialised staffing. In the Global North, New York City's Office of Freight Mobility (which sits within NYC's Department of Transportation DOT) is a well-documented example of a long-standing municipal freight team.

The operations and mission of the Office of Freight Mobility

The Office of Freight Mobility: *a unit part of the NYC DOT*

In this context, NYC DOT created a dedicated freight function, the "Office of Freight Mobility", in 2006, with operational consolidation in 2007 as a dedicated office within NYC DOT's planning structures.

This unit falls under the city jurisdiction but operates at the metropolitan level. It reports directly to the "Transportation Planning and Management Division of NYC DOT," which indicates that its activities are focused more on strategic-level planning and the long-term development of ideas, actions, and measures to be implemented, rather than on the day-to-day, operational management of urban logistics (in other words: it is a planning and program-delivery unit, not a street maintenance or construction delivery unit).

It therefore positions itself as a public policy and planning team dedicated to urban freight, able to lead programs, guide investments, and coordinate partners, in line with anticipating and taking proactive action rather than merely reacting to circumstances.

Six core functions and areas of focus

NYC's freight unit combines policy, planning and delivery of operational programmes. Its core functions include:

- **Freight policy and strategy:** development of citywide freight policy and planning frameworks aligned with DOT and city climate objectives.
- **Infrastructure and network planning:** truck route network management and freight-related infrastructure planning, with an emphasis on safety and efficiency.
- **Programme delivery and pilots:** testing and scaling operational measures (e.g., cargo bike delivery pilots; off-peak delivery programmes), often via voluntary participation and negotiated implementation conditions.
- **Stakeholder interface:** structured engagement with carriers, parcel integrators, large receivers, BIDs, and advocacy groups to improve feasibility and compliance.
- **Data and analytics:** use of freight data, modelling and visualisation tools to guide investments and refine regulations, including standardised approaches to data sharing with private operators in pilots.
- Furthermore, the unit develops academic partnerships, as evidenced by its collaboration with researchers on the publication of the article "Holguín-Veras, J. et al. (2018), The New York City Off-Hour Delivery Program: A Business and Community-Friendly Sustainability Program, Interfaces." about the pilot project for "off-hour deliveries" in New York City.

Examples of programs initiated and implemented

- Delivering New York: A Smart Truck Management Plan: Published in 2021, Delivering New York is the city's strategic freight management plan. It sets out a vision for a safer, more sustainable, more equitable, and more efficient last-mile delivery system.
- Microhubs Pilot Program: Microhubs are dedicated spaces, often on the street or along the curb, where trucks can transfer packages to lighter, lower-emission modes of transport, such as cargo bikes or handcarts. NYC DOT launched the first microhubs in April 2025 on the Upper West Side
- The Blue Highways Action Plan, launched by NYCEDC and NYC DOT in 2025, aims to expand waterborne freight transport and better connect waterfront terminals with urban micro-distribution solutions. The goal is to reduce reliance on trucks for certain freight flows and to revitalise the potential of New York's maritime and river network.

Internal organization

- A Director of the Freight Mobility Unit who "oversees" freight policy, infrastructure planning, and sustainable freight initiatives;
- Program Leads, focused on program management, coordination, stakeholder engagement, managing interfaces with external services, driving innovative approaches and engaging business partners, raising awareness within the context of specific programs, and producing analyses and metrics;
- Operational roles assigned to projects that are being conducted.

Overall, it is a small "core" unit (management + program managers), supported by strong interfaces with the DOT teams responsible for street-level operations (infrastructure improvements, signage, traffic safety, curb management). By 2025, the team consisted of about fifteen agents, reflecting a relatively substantial municipal capacity for freight by international standards.

Multi-Stakeholder arrangement

Urban freight transportation in NYC does not operate in isolation. However, it requires intensive, frequent coordination with various entities, from other internal departments to external institutional partners and private-sector stakeholders (business partners).

Internal partners

- Internally, the Freight Mobility Unit works with other NYC DOT technical teams involved in the planning process to establish, verify and confirm the operational feasibility of proposed actions.
- DOT teams responsible for street management (street design, signage, traffic safety, curb management) who are involved from the design phases and beyond to ensure the subsequent operation, maintenance, and operational monitoring of the initiatives undertaken that may affect them.
- New York City Department of City Planning (NYC DCP), which is involved as an ad hoc and strategic partner, particularly in cases involving land acquisition. (cf. case study « Zoning ordinance »)

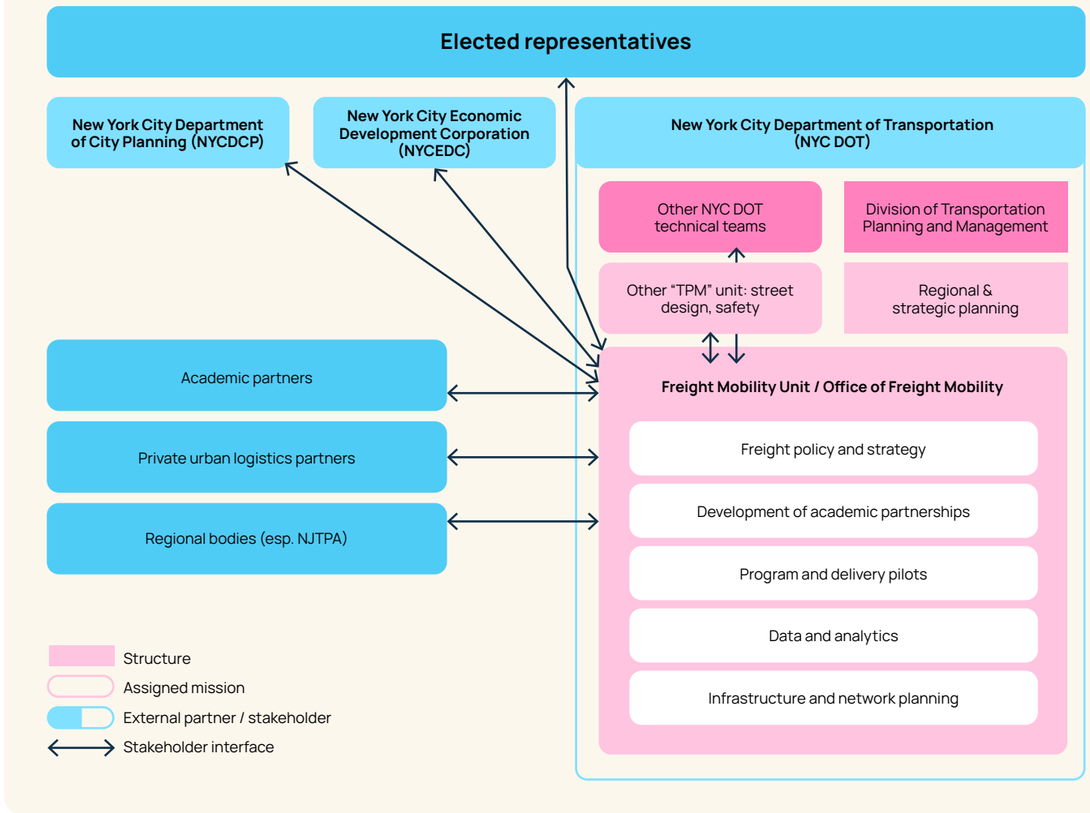
Externa institutional partners

- NYCEDC economic development agency: several freight, port, and urban logistics initiatives are being carried out in partnership, including “microfreight” and port-to-city initiatives (e.g., Blue Highways / microfreight);
- Regional bodies (metropolitan-scale logistics): such as the North Jersey Transportation Planning Authority (NJTPA), on mitigation initiatives related to e-commerce, demonstrating a representative and coordinating role that extends beyond NYC’s strict administrative boundaries;

Private urban logistics stakeholders

Who are involved in or invest in innovative experiments or projects.

Figure 11 **NYC Freight Mobility Unit: organisational structure and stakeholder relationships**



Key learnings

Setting up a dedicated and partnership-oriented freight unit: agility over numbers

The scarcity of dedicated freight units within municipal or regional public governments is evident globally. However, the share of cities able to sustain a specialised freight team tends to be higher in the Global North, where large metropolitan administrations are equipped with more important resources, stable staffing, data capacity, and mature mechanisms for public–private engagement, all conditions which support the institutionalisation of a freight unit.

In many Global South contexts, the constraint is less the relevance of freight (often extremely high) than the ability to fund, staff and retain a permanent specialist team, leading cities to rely on project-based approaches and external technical assistance rather than standing units.

The point here is to emphasise that the NYC freight unit was built up gradually, and its current size (15 people) is not a target to be reached. Instead, this case study highlights the benefits of a small, dedicated unit that might consist of just one or two experts.

Small teams can leverage partnerships and adopt a collaborative approach to overcome the absence of a dedicated unit. The key is to avoid working in silos and instead operate through multi-stakeholder partnerships and clear governance models. Thus, beyond establishing a unit focused on strategic planning, it is essential to establish the coordination and decision-making bodies and processes needed to develop concerted actions and proposals that can be effectively implemented and put into practice.

This organisational structure, which involves cross-departmental cooperation, aims to move beyond the "theoretical" stage and ensure the technical and financial capacity to implement and monitor the recommended actions.

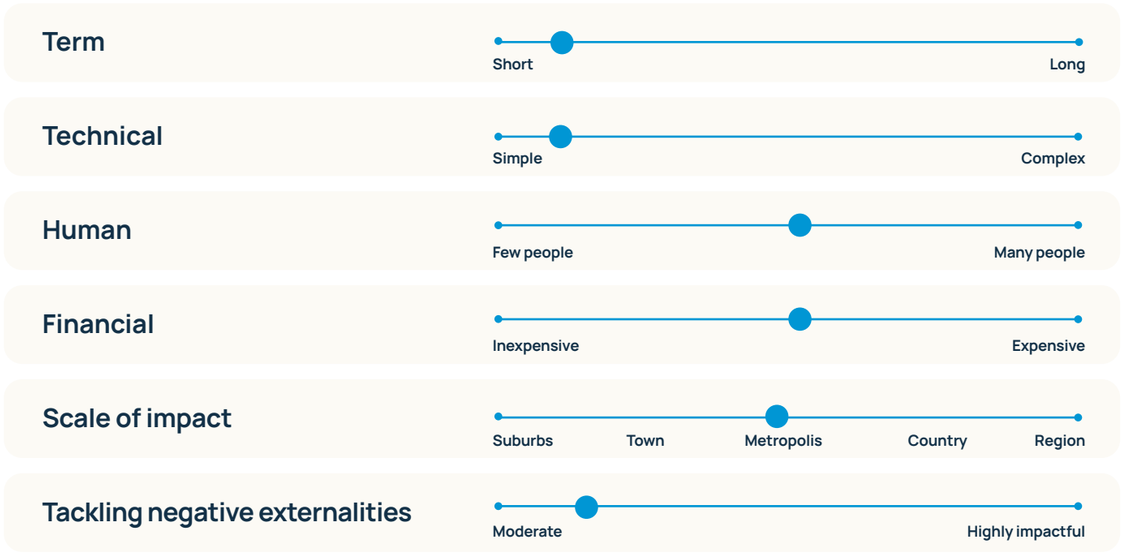
Ensuring continuity and traceability through the unit

To ensure continuity, consistency, and traceability, it is important that freight units:

- Monitor projects from inception through to implementation;
- Centralise and record discussions by creating databases, reference materials, and best-practice guides.

This continuity is necessary because the unit responsible for tactical implementation is not the same unit that will subsequently manage the measure day to day. By documenting its lessons learned and methods, the freight unit can equip operational units with the knowledge to roll out pilots and projects.

Indicators



Case studies from cities in the Global South and beyond

Other cases

Geography	Main relevance
London United Kingdom	London provides a comparable example of freight institutionalisation within a large transport authority. Transport for London has developed a dedicated freight and servicing policy agenda, supported by action planning and regular engagement with operators, boroughs and business stakeholders (TfL, 2021). Compared with NYC, the London case highlights the value of embedding freight within a metropolitan transport authority, rather than only within a municipal department. It also shows that technical capacity is not sufficient on its own: political leadership is needed to give urban logistics visibility, secure ownership of the topic, and ensure that planned measures are implemented, monitored and adjusted over time.
France national and inter-municipal model	France offers a different institutional model. Rather than relying only on large metropolitan freight units, national guidance and support programmes have promoted local urban logistics referent positions at inter-municipal level, supported by Cerema, a State-level technical agency. This arrangement helps disseminate tools, build peer learning, and gradually institutionalise freight competencies across several cities. It is particularly relevant for cities that cannot sustain a large dedicated unit comparable to NYC's Freight Mobility Unit, but still need an identified technical focal point for freight policy and coordination. Cerema's role in InTerLUD+ includes supporting local authorities in stakeholder mapping, mobilisation and preparation of consultation processes with local elected officials and economic actors (Cerema, 2026).
Lyon, Paris and Nantes France	Several French metropolitan authorities combine a technical unit or dedicated staff within the mobility department with a clearly identified elected official responsible for urban logistics. This dual structure is relevant when compared with NYC because it clarifies the relationship between technical coordination and political ownership. Technical teams can prepare measures, engage operators and monitor implementation, but an elected official gives the topic political visibility, arbitrates trade-offs and helps maintain continuity across departments. This model is useful where urban logistics measures affect public space, access rules, delivery practices or local economic actors.
France	InTerLUD+ provides a structured national platform for capacity building, peer exchange and innovation in sustainable urban logistics. It brings together local authorities, technical staff, elected officials and economic stakeholders around tools, training and voluntary urban logistics charters. Its relevance for the NYC case lies in the governance lesson: a freight unit or municipal team benefits from external learning networks that help standardise methods, share implementation experience and support political awareness. InTerLUD+ also shows how consultation and awareness-raising can be formalised beyond individual projects, creating a wider professional community around urban freight (InTerLUD+, 2026).



New York
Photo: Kyler Boone, Unsplash

11

Paris, France
Logistics land use in a municipal zoning ordinance



Paris
Photo: Matreding, Pexels

Why cities need to plan for logistics land before it disappears

Urban logistics requires Freight Transit Points close to demand. However, few cities explicitly reserve land for logistic purposes in their statutory urban planning documents. In many cases, freight is regulated through access rules, delivery time windows or vehicle restrictions, while the land-use dimension remains weakly addressed. This creates a structural contradiction: cities seek cleaner, more efficient last-mile deliveries but often fail to secure the logistics spaces needed to make them possible.

This omission has two major consequences:

01

First, logistics facilities tend to move away from dense urban areas as land prices rise and competition with housing, offices and retail increases. This phenomenon, often described as logistics sprawl, increases delivery distances, vehicle-kilometres travelled, operating costs (which is passed on to consumers through the selling price) and emissions.

02

Second, where logistics remains in the urban core, it is often inserted opportunistically into residual spaces: former car parks, underused basements, vacant plots, service yards, small industrial buildings, or "left-over" urban spaces. These solutions can be effective, but they are fragile without planning rules or long-term land strategies, especially as demand for urban logistics grows.

How Paris turns zoning rules into logistics facilities

The "PLU" modification which created logistics location perimeters

Paris is one of the few cities that has used its local zoning ordinance, the "Plan Local d'Urbanisme" (PLU), as a tool to protect and create urban logistics space. This zoning approach is part of a broader municipal strategy. In 2022, the City of Paris adopted its Urban Logistics Strategy 2022–2026, developed with more than 300 public and private stakeholders and structured around 50 actions. The strategy explicitly identifies logistics land and real estate as its first axis, with the objective of reinforcing a network of logistics spaces, reducing and decarbonising freight flows, preserving industrial and logistics sites, and reinvesting urban residual spaces for logistics uses (City of Paris, 2025).

The strategy also addresses five complementary areas: the management and sharing of public space for deliveries; working conditions for delivery riders and platform workers; support for proximity-based and responsible retail logistics; construction logistics, especially through alternatives to road-based flows; and the energy transition of freight vehicles and municipal fleets. These additional axes show that Paris does not treat logistics land as an isolated planning issue, but as one component of a broader urban logistics policy linking land use, street management, social conditions, modal shift and decarbonisation (City of Paris, 2025).

The approach began with the 2016 modification of the Paris local zoning ordinance (PLU), which introduced around 60 logistics location perimeters and extended the definition of facilities serving collective interest to include certain urban logistics spaces (APUR, 2020). The 2024 revision of the Paris local zoning ordinance, formally known as the Plan Local d'Urbanisme bioclimatique (bioclimatic PLU) significantly expanded this mechanism: according to France Mobilités (collaborative initiative led by the Ministry of Transportation, designed to support innovation in everyday mobility), the number of parcels affected by a logistics location perimeter increased from 60 to 116 (France Mobilités, 2025).

This approach aims not only to meet current needs but also to anticipate future demand. Reserving or pre-identifying land for logistics gives the city a way to avoid being permanently reactive. Instead, it creates a proactive planning framework through which public authorities can secure small and medium-sized sites before they disappear from the urban fabric and ensure that future redevelopment projects include logistics functions where appropriate.

The purpose of this approach is not only to respond to current needs, but to anticipate future demand. Reserving, or at least pre-identifying, land for logistics.

In dense urban areas, these lands are generally already occupied (gas stations, warehouses, etc.). These types of sites eventually move away from city centers due to rising land prices, and, therefore, can be easily targeted by zoning ordinances.

For example, the Paris PLU identifies future opportunities on sites such as current service stations, which may later be transformed or adapted into urban logistics spaces. This illustrates the long-term logic of the instrument: the city does not rely only on land that is immediately available, but also anticipates land that may become available in the short, medium or long term.

The system therefore works as a form of land-use reservation and safeguarding. It allows the city to identify strategic parcels and ensure that logistics remains a possible or required use when redevelopment occurs. This is particularly useful in dense areas where public authorities cannot easily acquire land immediately, but can influence future land-use outcomes through planning obligations.

In other words, it allows the city to develop strategic, long-term plans to avoid being permanently reactive to new needs.

These spaces are not, by themselves, a guarantee of low-emission logistics. Their role is to provide the spatial conditions for cleaner last-mile distribution by creating premises close to demand that can be used by cycle-logistics operators, electric vehicle fleets and other low-emission delivery models. The mechanism does not necessarily require the whole parcel to become a logistics facility. Rather, where a parcel is covered by a logistics location perimeter, the project owner must either deliver a light Urban Consolidation Center or avoid preventing its future delivery. Through this zoning ordinance, the city creates a planning framework through which

- public authorities can secure small and medium-sized sites before they disappear from the urban fabric
- and ensure that future redevelopment projects include logistics functions where appropriate.

From planning to implementation: *a semi-public key operator in Paris*

SOGARIS plays a central role in this ecosystem. It is a semi-public logistics real estate operator :

- historically linked to the Paris metropolitan area
- active in the development, construction and management of urban logistics facilities.

Its role is not to make direct changes to the zoning-ordinance (PLU), but to build upon it and provide operational and real estate capacity to transform planning intentions into actual logistics assets. SOGARIS describes its mission as developing a network of urban logistics spaces in Greater Paris, positioning logistics real estate as part of the sustainable city agenda

The most emblematic example is Chapelle International, also known as the Hôtel Logistique de la Chapelle, inaugurated by SOGARIS in 2018 in Paris' 18th arrondissement. It is a mixed-use, multimodal logistics building integrated into a new urban district. The building includes approximately 15,000 m² of logistics space at ground level, combined with other urban functions such as sport facilities, a restaurant, fitness activities, an urban farm and energy-related infrastructure. **This model helped make logistics more acceptable in a dense urban environment by combining freight functions with uses that directly benefit the neighbourhood.**

Paris also illustrates a broader shift towards **"inverted" or mixed logistics buildings**, where logistics functions are placed at lower levels and other urban **programs are stacked above or around them**. This differs from traditional peripheral logistics parks. It aims to reinsert freight into denser urban areas by adapting the building typology.

The SOGARIS "inverted logistics building" illustrates this scheme and how dense cities can reuse constrained urban assets to reinsert logistics into the city without creating a conventional urban consolidation center (UCC). The project converts a former multi-storey car park into an urban logistics facility, with freight activities accommodated within the existing infrastructure rather than placed in a peripheral logistics park. The model is "inverted" because logistics is embedded in the lower and internal levels of the building, while more publicly accessible functions are located at street level. These include concierge-type services on the ground floor and meeting rooms available for rental on level -1.

This mixed-use arrangement improves the urban acceptability of the facility by combining operational logistics with neighbourhood-facing services. It also demonstrates that residual infrastructure, such as obsolete car parks, can become strategic logistics space when supported by appropriate design, access management and a clear land-use framework. In addition, the architectural work contributes to the building's integration into the urban landscape.

Multi-Stakeholder arrangement

The staffing model is not comparable to a single operational freight unit with a clearly published number of agents. The measure relies on several institutional functions: the Direction de l'Urbanisme for zoning and planning rules, the city teams responsible for logistics strategy; APUR, the Paris Urban Planning Agency, for technical and spatial analysis; and SOGARIS and other operators for real estate implementation. APUR does not act as the decision-making authority, but provides analytical support to the City of Paris by documenting spatial needs, mapping potential logistics sites, assessing planning tools and supporting the integration of logistics functions into the local zoning ordinance. No public source identified provides a standalone headcount dedicated only to logistics zoning. The added value lies less in the number of staff than in the alignment between planning regulation, technical mapping, real estate expertise and operational partners.

Benefits and constraints

The main benefits are clear. The approach protects scarce urban land, creates a pathway for a dense network of last-mile facilities, and gives private developers a predictable framework. It also makes logistics visible as an urban function, rather than treating it as a nuisance to be displaced. However, the approach faces several constraints: high land values, technical adaptation costs, limited height and access conditions in existing buildings, neighbourhood acceptability, and the risk that reserved sites remain theoretical if no operator or viable business model is available.

Key learnings

Translate freight strategies into land-use regulation and operational models

Urban freight needs to be integrated into statutory planning documents, not only into mobility strategies. A freight strategy can identify needs, corridors, and operational models. However, it has limited effect unless it translates into zoning provisions, land-use safeguards, redevelopment obligations, and operational implementation.

Plan logistics land as a network

Logistics land policy should be conceived as a network strategy, not as a collection of isolated sites. Reserving parcels without a clear spatial logic can create facilities with limited operational value. Conversely, a logistics masterplan without land-use safeguards risks remaining aspirational. The two instruments need to work together: the strategy defines the target network, while the zoning ordinance protects the sites needed to build it.

Design logistics facilities as mixed-use urban spaces

The cases reviewed show that urban logistics facilities can be combined with complementary uses, such as concierge services, meeting rooms, sport facilities, offices or neighbourhood-facing services. This matters because urban consolidation centres are rarely accepted as a stand-alone urban function in dense areas. Multifunctional programming can improve acceptability and help integrate logistics buildings into the surrounding urban fabric. It also supports a more efficient use of scarce land by combining operational freight functions with services that are visible and useful to local stakeholders.

Use tactical logistics spaces to manage transition

Furthermore, tactical and transitional land can help cities build logistics capacity before more dedicated and efficient sites become available. Reusing underused infrastructure, such as former car parks, basements, service yards, residual plots, or land awaiting planning permission, allows cities to meet immediate logistics needs while managing the transitional period before recovering, acquiring, or reserving land suited to urban logistics.

In addition, temporary or reversible logistics spaces make it possible to test new facility typologies, access arrangements, operating models and mixed-use formats before scaling them up. This is particularly useful for assessing technical feasibility, stakeholder acceptability and economic viability. It also reduces implementation risk: if the model does not work, the city, operator or landowner can adjust the format, relocate the function or return the site to another use.

Anticipate long-term adaptability

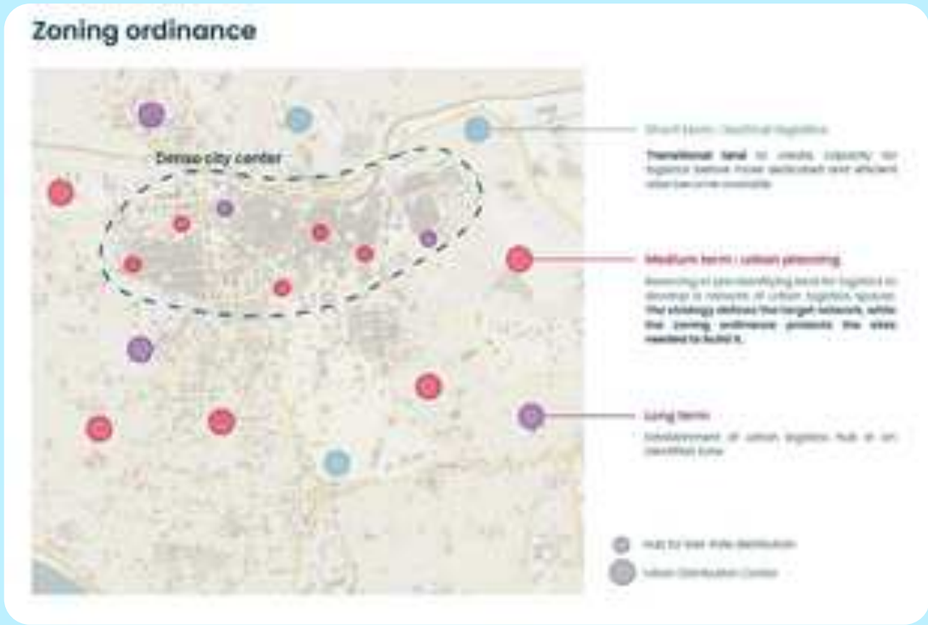
The first level of adaptability is reusing existing infrastructure. Cities can recover and optimise assets that have lost part of their original function, such as obsolete car parks or underused service infrastructure. The second level is to plan for future functional change:

- If the logistics hub becomes underused
- if a more strategic and efficient location is secured
- or if the logistics function is intentionally designed as a temporary use from the outset, for instance where a former petrol station is converted into a UCC for ten years before the site is redeveloped into a new building.

The building should be able to evolve towards other functions. This flexibility should be anticipated from the design stage through adaptable layouts, access arrangements, technical systems and contractual conditions.

Match zoning provisions with implementation capacity

A zoning obligation is not enough. Cities need operational triggers, clear technical requirements, a list of priority locations, and an institutional actor that can connect landowners, developers, and logistics operators. In Paris, the Direction de l'Urbanisme can refer project owners to the Urban Logistics Strategy team when a project concerns a logistics location perimeter (France Mobilités, 2025). This type of coordination is essential to ensure that logistics provisions are not limited to formal designations.



Start early in Global South contexts

Paris is a particular case because it combines several enabling conditions: a strong municipal planning framework, high logistics demand, extreme land scarcity, a long-standing public policy interest in urban freight, technical support from APUR, and a semi-public logistics real estate operator able to carry projects.

Nevertheless, for cities in the Global South, the key message is to act early and progressively. Reserving land for logistics does not necessarily require large public investments at the outset. It can begin with mapping existing logistics functions, identifying strategic small plots, protecting market and food supply chains, and testing tactical logistics spaces in underused urban assets.

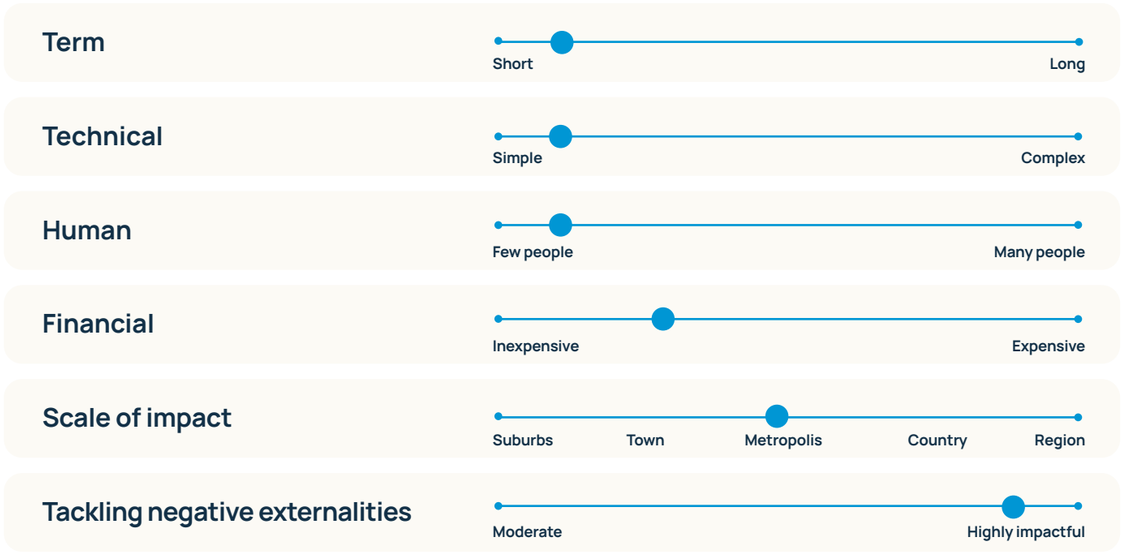
This staged approach can prevent future dependence on distant logistics hubs, reduce the cost of retrofitting logistics into dense areas, and allow cities to evaluate which facility types are technically, economically, and socially scalable.

For cities in the Global South, the relevance of a zoning-ordinance approach depends on planning capacity, land governance and enforcement conditions. In many contexts, informal land use, incomplete land-use plans and fragmented institutional responsibilities make zoning difficult to apply. However, strategic urban or peri-urban sites may still not be fully locked into high-value redevelopment, creating a window of opportunity to anticipate logistics needs before land pressure makes this impossible. The strategic lesson from Paris is therefore not to replicate the instrument mechanically, but to identify and protect logistics land early, before rising land values and redevelopment pressure push freight facilities to the urban periphery. This can help avoid repeating the trajectory of many Global North metropolitan areas, where logistics activities were progressively displaced from dense urban cores and later had to be reintroduced at high cost.

The point is to integrate freight into planning documents early, before land scarcity becomes irreversible.

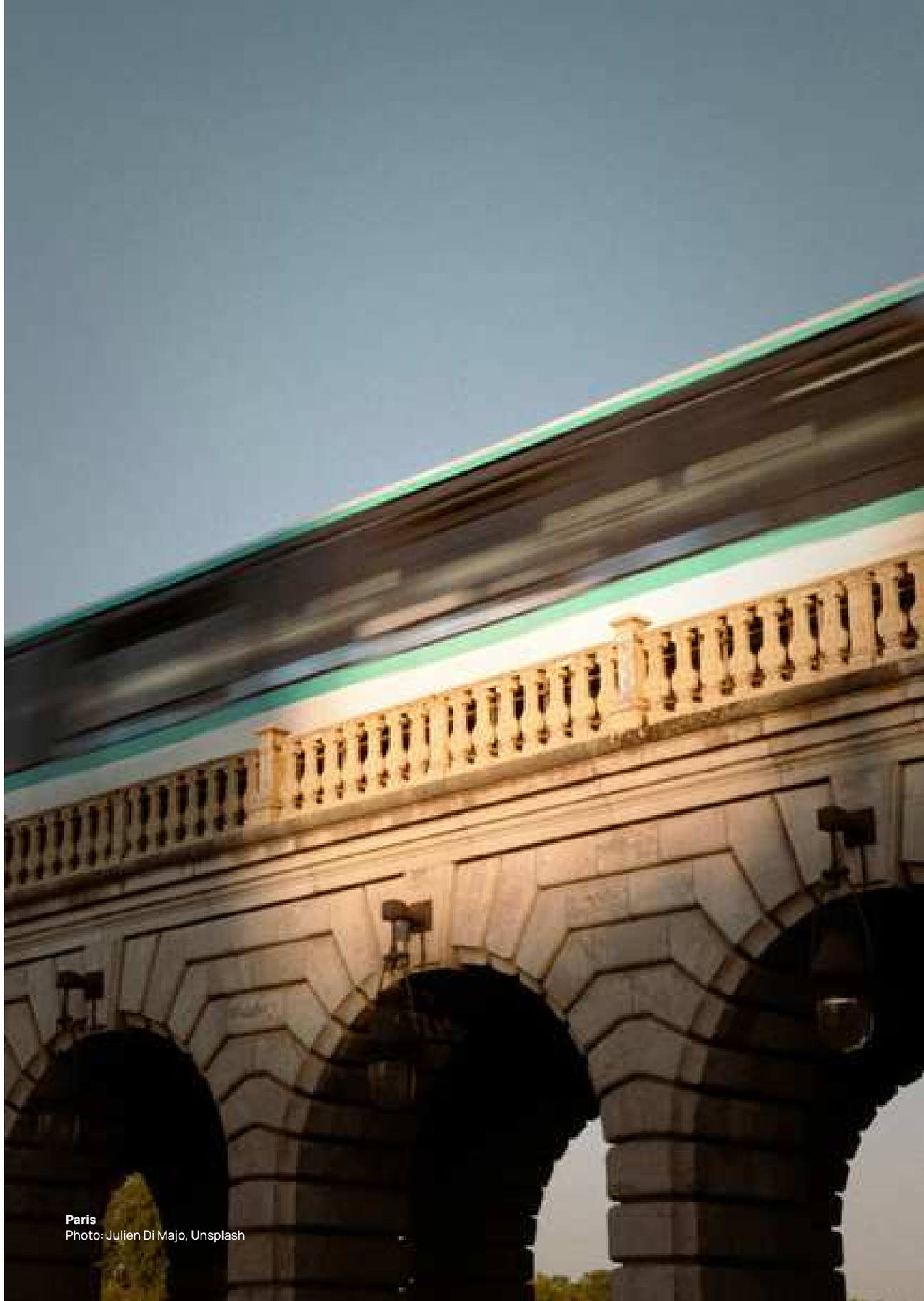
Furthermore, in many Global South contexts, logistics-oriented zoning may be easier to introduce than equivalent restrictions on passenger transport. Freight land-use reservations or logistics overlay zones generally affect a smaller, more professionalised set of actors that can be consulted.

Indicators



Other cases

Geography	Main relevance
Hong Kong	Hong Kong is one of the clearest references for high-density logistics real estate. Severe land scarcity and high land values have made multi-storey logistics facilities a standard response to the need to keep freight functions close to ports, airport facilities and dense urban demand. The relevance for the Paris case is twofold: first, logistics land is treated as a strategic urban asset; second, vertical building design allows logistics capacity to be maintained where conventional single-storey warehouses would be pushed to the periphery.
Japan	Japanese logistics real estate operators often rely on repeatable high-specification building models: ramp access, high floor loading, generous ceiling heights, seismic safety, security systems and tenant-oriented services. This matters to the Paris case because it shows logistics integration is not only a zoning issue. It also requires a mature real estate product that operators trust and can use efficiently. Planning tools protect land, but building specifications determine whether logistics operations are viable.
Bangkok Thailand	Thailand offers a different lesson for Global South and middle-income contexts. Around Bangkok, logistics land can still be easier to identify than in mature European urban cores, particularly along transport corridors and peri-urban industrial areas. Improved rail connectivity and potential river connections create opportunities for multimodal logistics development. The main constraint is often less physical land scarcity than institutional coordination, regulation, import-export procedures and the need to align infrastructure funding with logistics planning. This is relevant to Paris because it shows that early land protection should be combined with governance reform and multimodal connectivity.



Paris
Photo: Julien Di Majo, Unsplash

12

Rotterdam, The Netherlands *Decarbonising urban logistics*



Rotterdam
Photo: Igor Passchier, Pexels

Rotterdam: the need to decarbonise urban logistics

A Country Dependent on Its Neighbours

Rotterdam's urban logistics system generates significant externalities. Vans and trucks contribute to CO_2 emissions, local air pollution, noise, congestion, curbside pressure and conflicts over limited public space. Their frequent stops, low-speed circulation and repeated access to dense neighbourhoods make freight vehicles a visible and operationally sensitive part of the urban mobility system.

Rotterdam's challenge is therefore twofold: reducing emissions from urban freight while maintaining the reliability and efficiency of a logistics system that businesses, residents and public services depend on. This challenge is made more complex by fragmented urban delivery flows across sectors, operators and vehicle types. Parcels, retail goods, construction materials, service trips and waste flows follow different operating patterns, vehicle requirements and delivery constraints. This fragmentation can lead to low load factors, duplicated trips and inefficient use of street space, while also complicating the planning of charging infrastructure, logistics hubs and delivery areas.

The Rotterdam Strategy

Rotterdam's approach is grounded in a key distinction: decarbonisation is not limited to replacing a combustion-engine vehicle with a zero-emission vehicle. Instead, the city combines efforts to reduce the overall volume of freight movements within the city alongside the objective of ensuring that remaining trips are emission-free. The main areas for action can be summarised as follows: achieving zero emissions and eliminating inefficient trips (Municipality of Rotterdam, 2020).

In order to successfully implement this strategy the City of Rotterdam will focus on three areas:

01

Regulatory
involving a clearly defined zero-emission zone and a phased approach to access up to 2030.

02

Support
for innovation and logistical efficiency, by funding or supporting projects that reduce the number of kilometres travelled, improve vehicle load factors, develop hubs, promote cycle logistics or test new delivery models.

03

Structured
cooperation between the local authority, hauliers, shippers, logistics platforms, trade associations, service providers and innovation stakeholders.

Why Rotterdam has focused on urban logistics

Rotterdam's focus on urban logistics is supported by clear evidence on the scale and impact of freight movements in the city. The city's zero-emission logistics covenant estimated that, by 2025, around 23,000 vans and 3,500 lorries would enter the zero-emission zone every day, driving approximately 336,000 km and 52,000 km respectively within the zone. These figures show that delivery and service vehicles are not a marginal component of urban mobility, but a major source of daily traffic in dense urban areas. They also help explain why logistics was identified as a strategic lever for achieving Rotterdam's climate and air-quality objectives: vans and trucks are essential to retail supply, construction, parcel delivery, waste collection and professional services, but they also generate CO_2 emissions, local air pollution, noise, congestion and pressure on public space.

The expected benefits of action are significant. Rotterdam's regulatory decision estimates that the zero-emission zone could reduce CO_2 emissions by 4 kt in 2025 and 32 kt in 2030 compared with autonomous fleet renewal, while NOx emissions could fall by 60 tonnes in 2025 and 188 tonnes in 2030. Along busy roads, the traffic contribution to NO_2 concentrations is expected to decrease by around 50%. The social cost-benefit analysis also estimates net societal benefits of €352.2 million from improved air quality and climate effects, after accounting for costs to the municipality and businesses. These figures justify Rotterdam's focus on urban logistics: the sector combines high environmental impact, strong visibility in the urban environment and practical opportunities for intervention through access regulation, fleet renewal, consolidation and more efficient delivery organisation.

Policy framework for implementing this strategy

Rotterdam's action on urban logistics is guided by a dedicated zero-emission city logistics framework. The city first adopted the Stappenplan ZES in 2019, setting out the roadmap towards zero-emission city logistics in the city centre by 2025. This was followed by the Covenant Zero Emission City Logistics (ZECL) Rotterdam, signed on 1 December 2020 by the municipality and logistics-sector partners. The covenant replaced the 2014 Green Deal 010 and functions as the main public-private implementation framework, with an action programme, monitoring up to 2030, and the zero-emission city logistics zone in 2025 as the principal milestone. Its targets include zero-emission city logistics for delivery vans from 1 January 2025 and for delivery lorries by 2030, or earlier where feasible. The covenant itself is not a statutory plan; the legally binding access restriction is implemented through the municipal traffic decision establishing the zero-emission zone.

Scope of this strategy

The ZECL strategy does not directly address port logistics as a dedicated interface-management issue. **Rotterdam's Stappenplan ZES explicitly excludes most port-related logistics** from the scope of city logistics, noting that port flows generally move through corridors towards the hinterland, Antwerp or the Westland. Port logistics is therefore treated as part of separate sustainable logistics activities led by the Port Authority, MRDH and the national government. However, the urban logistics strategy still manages the interface with wider freight flows indirectly: the Rotterdam Ring is kept outside the zero-emission zone, traffic not destined for the city is unaffected, and logistics areas along the ring remain accessible as potential hubs for bundling zero-emission deliveries into the ZECL zone.

Levers for action

"Zero emissions"
Encouraging the decarbonization of the logistics fleet

Fleet electrification is a key lever for decarbonizing urban logistics in Rotterdam, as commercial vehicles and trucks handle a significant share of deliveries, services, commercial supplies, and business-related traffic within the city. Gradually replacing them with zero-emission vehicles makes it possible to simultaneously reduce CO_2 emissions, air pollutants, and noise, while contributing to the municipality's climate and air quality goals.

The zero-emission zone and its ambitions (A)

The zero-emission zone, dedicated to logistic trips, introduced in 2025 reflects this priority: it uses access to the city centre as a clear regulatory signal to accelerate fleet renewal. Commercial vehicles and trucks must be electric or hydrogen-powered to enter the zone.. Transitional rules allow some existing diesel vehicles to continue operating in the zone for a limited period, depending on their vehicle category, age and Euro emission standard. The zone only applies to light commercial vehicles and trucks used to transport goods or equipment. The restriction does not apply to private passenger vehicles and therefore does not affect the daily mobility of households. From 2030 onwards, all logistics vans and trucks operating within the zone must be zero-emission. A few figures illustrate the scale of the initiative. Within the Rotterdam area, preparatory studies estimated that approximately 23,000 commercial vehicles and 3,500 trucks entered the zone daily, covering a combined distance of around 336,000 km/day for vans and 52,000 km/day for trucks. These figures demonstrate that urban logistics—often less visible than passenger mobility—represent a significant lever for reducing local emissions (Municipality of Rotterdam, 2020).

Facilitate the acquisition and use of electric vehicles (B)

Leasing is an important lever because it reduces the upfront investment barrier for operators, especially SMEs. This matters for delivery vans and, increasingly, for heavier vehicles where purchase costs remain high. Although Rotterdam does not operate a dedicated municipal leasing scheme, leasing is already a significant pathway for business fleet renewal in the Netherlands. In 2025, more than 80% of newly leased vans in the country were electric, while electric vehicles represented 15.5% of the total leased van fleet, compared with 9.5% the previous year. Lease vans also accounted for almost 38% of all kilometres driven by Dutch vans, confirming the operational relevance of leasing for business mobility and delivery activities. Public subsidies can support the transition, but leasing and private financing mechanisms remain essential to make fleet renewal feasible for operators.

Charging infrastructure is a central enabling condition for freight decarbonisation, but logistics charging should not be planned only as a network of public chargers in dense urban areas. At national level, the Netherlands is expanding public charging rapidly, with around 1,600 public charging points added per month and national public charging coverage reaching 83% in 2025. In Rotterdam, public charging points increased from 7,203 to 8,020 between the beginning and the end of 2025. However, freight operators have specific charging needs that differ from general public charging. The most strategic locations are often near depots, logistics parks, distribution centres and peripheral activity zones. This is particularly relevant for trucks and high-utilisation vans, which require reliable charging aligned with delivery schedules, loading operations and route planning. Rotterdam's Laadinfrastructuur 2021–2030: Positief Geladen charging strategy complements the city logistics framework by accelerating charging infrastructure deployment for all user groups, including freight vehicles, with particular attention to vans, depots, logistics sites and heavier vehicles.

Adaptation of the vehicle to its intended use (B)

Another strategy is to use smaller vehicles whenever the flow type permits. Rotterdam therefore promotes the use of Light Electric Freight Vehicles (LEFVs), cargo bikes, and other small vehicles suited for local deliveries. These solutions are particularly relevant for parcels, small-volume shipments, certain food supply flows, service-related deliveries, and densely populated areas where vans lose time in traffic or searching for parking. The Covenant Zero Emission City Logistics Rotterdam indicates that reducing the mileage covered by vans and trucks can be achieved by shifting to clean modes of transport, such as LEFVs and cargo bikes (Municipality of Rotterdam, 2020).

"Zero inefficient trips"
reduction of mileage and consolidation of flows

The climate and urban benefits resulting from the sector's decarbonization are not limited to fleet technology (the "vehicle effect") but also extend to mileage (the "volume effect").

Pick up points as a solution to consolidate flows (B)

Reducing emissions also requires managing delivery demand and improving the efficiency of last-mile operations. In the express and parcel segment, Rotterdam's covenant notes that deliveries are made through fine-grained networks serving many individual addresses, but also that the sector already benefits from logistics hubs on the outskirts of the city and relatively well-loaded vehicles. The city therefore focuses on further optimisation through micro-hubs inside the zero-emission zone, collection points, parcel lockers, LEFVs and cargo bikes. The covenant also notes that several parcel operators were already delivering emission-free in Rotterdam and experimenting with micro-hubs, parcel lockers and LEFVs DPD, for example, committed to developing and evaluating a "City Store Rotterdam" as a mini-hub intended to reduce trips in the city and enable the use of smaller emission-free vehicles, alongside placing parcel lockers to reduce delivery trips (Municipality of Rotterdam, 2020).

This approach is supported by modelling and applied research. A 2024 simulation study on Rotterdam found that micro-hubs can increase consolidation of inner-city deliveries and that the largest reductions in vehicle-kilometres are achieved when courier, express, and parcel operators collaborate fully rather than operating isolated micro-hub networks (de Bok et al., 2024).

Public procurement and construction logistics

Public procurement and construction logistics are practical levers in Rotterdam's decarbonisation strategy. The municipality does not operate its own consolidation hub, but it has actively encouraged construction-related trip reduction through procurement criteria and targeted subsidies. Its 2021–2023 construction logistics subsidy supported contractors that could demonstrate measurable reductions in trips to and from construction sites, including through the use of construction hubs, bundled deliveries, staff transport measures and zero-emission vehicles. In parallel, private operators such as Hub010 provide hub-based construction logistics at the edge of Rotterdam, where materials can be stored, bundled and delivered just-in-time to urban sites, where possible, with zero-emission vehicles. This affects contractors, subcontractors, construction material suppliers and municipal project delivery: the city shapes the requirements and incentives, while private actors reorganise the flows and operate the consolidation services.

Multi-Stakeholder arrangement

The role of the various public entities

The financing architecture in Rotterdam is split across European, national and local levels. The European Union sets the wider industrial and regulatory direction by defining CO_2 emission standards for new vehicles and progressively tightening emission-reduction targets for both light commercial vehicles and heavy-duty vehicles. This creates a long-term market signal for manufacturers, fleet operators and infrastructure providers. At the national level, the Netherlands organises large-scale vehicle purchase incentives and strategic charging infrastructure programmes. At the local level, Rotterdam acts as a regulator, coordinator and market enabler. Its main contribution has been to create clear regulatory signals through the zero-emission zone, provide business advice and transition services, and fund targeted innovation projects such as Lab ZES (Zero Emission City Logistics Lab, defined in section 4), which supported practical solutions for more efficient or zero-emission urban logistics.

Regional bodies also play a key coordination role between the national and local levels, such as . The Metropoolregio Rotterdam Den Haag, which provides coordination support between municipalities on zero-emission zones, business communication, exemptions, hubs and charging infrastructure.

Public-private partnerships as a lever for action for "zero emission" and "zero inefficient trip (C)

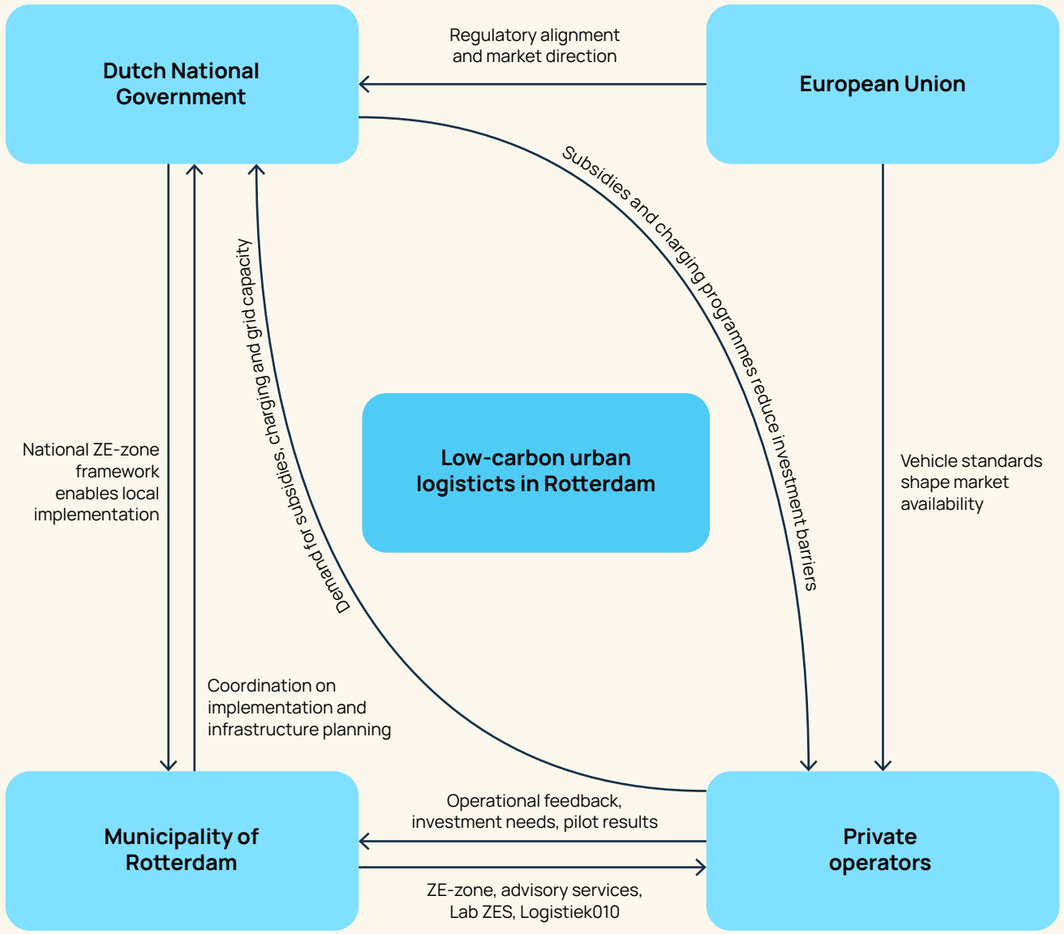
Public-private partnership is used to operationalise Rotterdam's zero-emission logistics strategy. Through Logistiek010, a city logistics community active since 2014, the municipality works with logistics operators, shippers, service providers, business associations, knowledge institutions and regional partners to translate the zero-emission zone into practical business decisions. The platform provides information on access rules, exemptions, subsidies, and charging; offers free personalised advice to entrepreneurs; supports total cost of ownership assessments for electric vans; connects businesses with vehicle and charging providers; and enables companies to test electric vans, cargo bikes, and other light electric freight vehicles before investing.

This partnership model clarifies the division of responsibilities. The municipality does not operate a dedicated scrappage scheme or directly finance large-scale fleet renewal. Its role is to create regulatory certainty, provide advisory support, reduce information barriers, support targeted innovation through schemes such as Lab ZES, and facilitate access to national subsidy programmes. Private operators remain responsible for the main capital and operational investments: purchasing or leasing vehicles, installing depot charging, adapting routes, reorganising deliveries and testing consolidation or right-sized vehicle solutions.

In this sense, Rotterdam's approach relies less on direct municipal financing of vehicles than on a combination of regulation, facilitation, information-sharing and targeted support for operational change.

Fleet decarbonisation is largely catalysed by public regulation and public funding and is subsequently implemented by private operators. Logistics efficiency is largely implemented by private operators, but enabled, incentivised and sometimes mandated by the municipality.

Figure 12 **Stakeholder interactions enabling low-carbon urban logistics in Rotterdam**



Investment programs

There are multiple investment programs, from the national to the local level, which are deployed to support Rotterdam's zero emission logistic goals.

Vehicle investment – the SEBA program (LCVs)

The Dutch government has deployed several financial instruments to reduce the initial cost premium of electric vehicles. For light commercial vehicles, the SEBA program supported the purchase or leasing of zero-emission vans between 2021 and 2024, offering subsidies of up to €5,000 per vehicle. The €60 million budget was fully utilised, indicating both strong demand and a budget allocation that was limited relative to the scale of the fleet requiring conversion (RVO, 2024).

Vehicle investment – the SEBA program (LCVs)

For heavy-duty vehicles, **the state-run AanZET programme** serves as the primary instrument. It funds the purchase or lease of zero-emission trucks, offering subsidies of up to €115,200 per vehicle, depending on the category and company size. A budget of €119.2 million has been announced for a second funding round in 2026, following an initial allocation of €78 million. Over 2026–2030, more than €1.3 billion will be allocated to the scheme, aiming to support nearly 20,000 zero-emission trucks. Funding is expected to rely, in particular, on revenue from the upcoming Dutch heavy-vehicle road user charge, scheduled to take effect on July 1, 2026 (RVO, 2026; Government of the Netherlands, 2025).

Investment in public charging coordinated by the National Charging Infrastructure Agenda

The National Charging Infrastructure Agenda is not an investment fund, but rather **a national coordination framework governed through a steering committee established by the Ministry of Infrastructure and Water Management**, with the Netherlands Enterprise Agency (RVO) providing the secretariat. It structures cooperation among national ministries, RVO, municipalities, regions, grid operators, and market actors to ensure charging infrastructure keeps pace with vehicle electrification. Dedicated funding is channelled through specific schemes:

- **SPULA** supports public charging infrastructure for heavy-duty vehicles, with a 2026 budget of €14.5 million;
- **SPRILA** supports private charging infrastructure at company sites, with a 2026 budget of €68.5 million for charging infrastructure €45 million for stationary batteries;
- **SSEB** provides support for charging infrastructure linked to clean construction equipment.

SPRILA, SPULA and SSEB are national funding schemes implemented by the Netherlands Enterprise Agency (RVO) on behalf of the Ministry of Infrastructure and Water Management. By the end of 2025, the country had approximately 209,500 charging points, including over 6,500 fast-charging points. For logistics fleets, the SPRILA and SPULA schemes support private on-site charging and public stations for heavy-duty vehicles, respectively, with high power requirements for heavy-vehicle charging sites (National Charging Infrastructure Agenda, 2026; RVO, 2026).

Targeted Municipal Investments – ZES Lab 2020–2024

The primary **municipal investment is the "Lab ZES 2020-2024" scheme**, a grant program that supports concrete projects focused on efficiency or zero-emission urban logistics—such as consolidation, hubs, trip reduction, demonstrators, and operational solutions. The initiative offered up to €100,000 per project, with a total cap of €2 million over the program's duration, and required the project to cover at least 50% of the costs. It also excluded projects eligible for national vehicle purchase subsidies, clearly demonstrating the City's aim to fund complementary logistics innovations rather than replace national programs.

Construction logistics program

The construction logistics program in Rotterdam primarily refers to a municipal subsidy for reducing construction-site trips between 2021 and 2023. It aimed to reduce vehicle movements to and from construction sites. The subsidy did not cover all aspects of site logistics; instead, it targeted the additional costs of trip reduction—such as construction hubs, consolidated deliveries, prefabricated materials, collective worker transport, or zero-emission vehicles. The scheme operated in a fairly structured manner. To qualify, a contractor had to show that at least **50 trips involving the transport of materials or equipment had been avoided**. The subsidy could **cover up to 50% of the additional costs, capped at €150,000 per construction project**. Under the 2019–2021 scheme, six construction projects in Rotterdam generated a combined reduction of 5,300 trips and 2,350 zero-emission journeys. The follow-up 2021–2023 scheme had a total budget ceiling of €650,000.

Initial results and future ambitions

The Rotterdam case illustrates a logistics transition based on regulatory predictability. The city did not merely encourage operators to switch vehicles; it announced a medium-term access restriction, integrated it into a national framework, and supported the move with financial aid, business advice, and charging infrastructure planning. This combination reduces risk for transport operators: investing in a zero-emission vehicle becomes a foreseeable requirement for urban market access, rather than an isolated, voluntary decision.

Early indicators

Although most investments and measures have only recently been implemented, Rotterdam already has indicators in place to track the transition.

The upcoming introduction of zero-emission zones for urban freight in 2025 has driven a shift toward electric logistics. In the first half of the year, approximately 78% of new van registrations in the Netherlands were electric—far higher than the European average. Rotterdam also tracks the "clean passages within the ring" indicator, which measures the passage of electric, hydrogen, and hybrid vehicles. This figure stood at 8.6% in 2022 and 10.6% in 2023, with a target of 20% for 2026.

The construction logistics program has resulted in a reduction of 5,300 trips across six projects, including 2,350 zero-emission trips.

Local and national policies

The Netherlands is implementing zero-emission zones in 28 cities and at Schiphol Airport between 2025 and 2030. The national program anticipates electrifying approximately 250,000 commercial vehicles and 16,000 trucks involved in urban logistics by 2030. This ambition sends a strong market signal: operators know that access to city centres will become conditional on zero-emission powertrains, thereby reducing uncertainty for private investment (National Charging Infrastructure Agenda, 2026; Business.gov.nl, 2026).

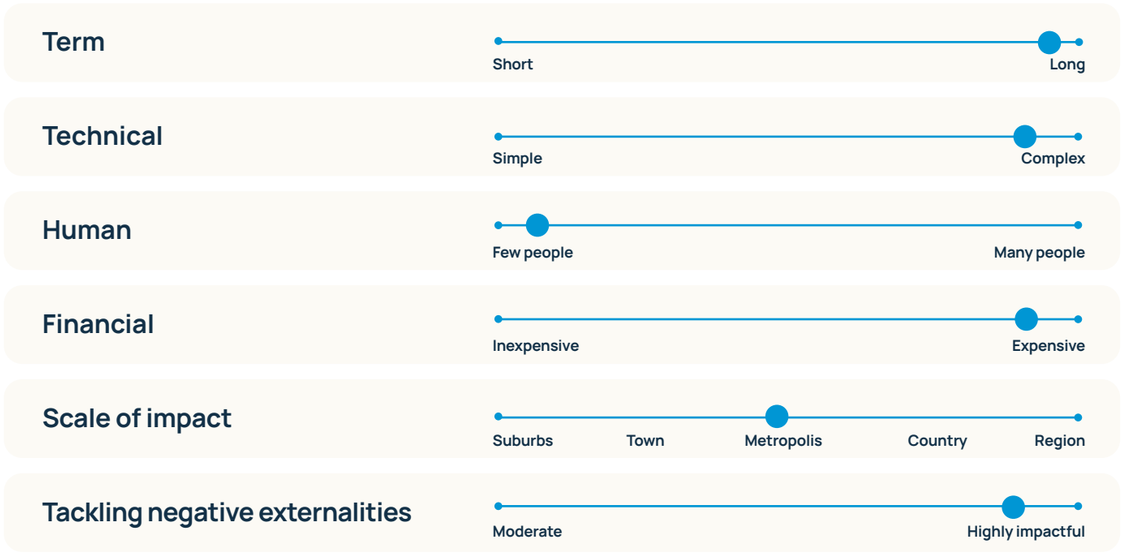
European framework

The European framework reinforces this trajectory. For new cars and light commercial vehicles, the European Union has set a target of 100% reduction in tailpipe CO_2 emissions by 2035, with an interim milestone in 2030. For heavy-duty vehicles, European standards mandate progressive emission reductions for new vehicles: 45% by 2030, 65% by 2035, and 90% by 2040. While these rules are not sufficient on their own to organise urban logistics, they provide certainty regarding manufacturers' industrial trajectories and ensure coherence with local zero-emission zone policies.

Key learnings

In contexts with limited budgets or political uncertainty, pilot projects can reduce implementation risk and build evidence before wider regulation is introduced. Cities can begin with specific corridors, markets, public-sector deliveries, construction sites or high-density commercial districts. Pilots should be designed from the start with measurable indicators: vehicle-kilometers reduced, emissions avoided, number of operators involved, delivery reliability, business costs and infrastructure needs. Once the model is proven, cities can scale it through incentives, procurement rules, access regulation and private investment.

Indicators



Case studies from cities in the Global South and beyond

Other cases

Geography	Main relevance
Bogotá Colombia	Bogotá provides a useful Global South counterpoint to the Rotterdam case. While Rotterdam's transition is supported by a mature zero-emission zone, strong public-private coordination and expanding charging infrastructure, Bogotá operates in a more constrained context, marked by fragmented ownership, older freight vehicles, many small operators and tighter financing capacity. This contrast is useful because it shows that urban logistics decarbonisation cannot rely on a single model: the pathway must reflect the structure of the local freight market.
London United Kingdom	Relevant for last-mile logistics, cargo bikes, micro-hubs, curbside management, and reducing van traffic in dense urban areas. London shows how low-carbon deliveries can be integrated into wider freight planning, including through zero-emission vehicles, rail, waterways, cargo bikes and walking deliveries.
Oslo Norway	Relevant for public procurement as a market-shaping tool. Oslo shows how a city can use zero-emission transport requirements in public contracts, support for charging infrastructure, biogas and zero-emission heavy-duty vehicles to accelerate the transition of logistics services.
Shenzhen China	Relevant for large-scale deployment of electric logistics vehicles. Shenzhen shows that fleet electrification must be assessed not only by vehicle numbers, but also by actual vehicle use, charging infrastructure, and policy adaptation by market segment.
Barcelona / Milan / Prague	Relevant for lighter and more replicable last-mile solutions, including temporary hubs, micro-hubs, cycle logistics and operator mutualisation. These cases illustrate how cities can test low-carbon delivery models before moving towards larger-scale regulation or infrastructure investment.



Rotterdam
Photo: Michelle Henderson, Unsplash

13

Barcelona, Spain *Innovative curb management for loading/unloading*



Barcelona
Photo: Alex Quezada, Unsplash

Why innovate in curbside management?

Like many metropolitan cities today, Barcelona faces strong structural pressures.

- First, urban logistics demand is increasing, driven in particular by e-commerce and the fragmentation of last-mile deliveries. Barcelona's strategy indicates that online purchases increased from around 23 million in 2018 to 33 million in 2020, a 44.6% increase in two years (Barcelona City Council, 2022).
- Second, urban freight distribution generates significant externalities. In Barcelona, it accounts for around 17% of vehicle-kilometres but contributes 31% of PM10 emissions and 34% of NOx emissions. Vans and lorries are also involved in a significant number of crashes, with 1,566 recorded accidents, including 3 fatalities, 23 serious injuries and 1,709 minor injuries (Barcelona City Council, 2022).
- Third, poorly controlled curbside use creates conflicts with other uses of public space: general traffic, public transport, pedestrians, cyclists, residents and commercial activities. The municipal strategy reports around 150,000 fines per year in controlled areas related to urban freight distribution, of which 47% are due to the absence of a time ticket and 32% to exceeding the authorised time (Barcelona City Council, 2022).

As a result, the city's model for regulating loading/unloading zones, in place since the early 2000s, was no longer sufficient to meet needs and generated misuse and negative externalities affecting all city users.

A lightweight model based on a mobile application

From static regulation to a dynamic tool

The areaDUM (Àrea de Distribució Urbana de Mercaderies, meaning Urban Freight Distribution Area) model was introduced in Barcelona in 2015, replacing the former cardboard parking disc used in loading/unloading bays with a smartphone-based digital validation system. The new system applied to around 9,000 loading/unloading spaces and approximately 45,000 daily freight parking operations.

Before the areaDUM digital tool, operators relied on their empirical knowledge of delivery rounds, driver experience, and availability observed upon arrival to optimise their search for a loading space. When regulated spaces were occupied, insufficient, or poorly suited to route constraints, delivery drivers resorted to double parking, stopping on pavements, or using areas not intended for this purpose. Subsequently, the SPRO application replaced areaDUM in 2020. Even if it retained the core operating model introduced by areaDUM (developed just after), SPRO is not a simple rebranding. It extends the area of use, scaling up from Barcelona to several municipalities in the Metropolitan Area, improves the user interface and alerts, and adds new features (developed after).

How the SPRO model works

SPRO is intended for professionals carrying out urban goods distribution operations. The vehicles concerned are mainly lorries, vans, and mixed-use or two-seat commercial vehicles authorised by delivery zone signage.

The process is simple:

01 The driver parks in an authorised DUM space.

02 The driver opens SPRO.

03 The driver selects the vehicle or enters the licence plate.

04 The driver enters the DUM code shown on the vertical sign for the zone.

05 The driver starts the parking session.

Operating conditions

The ticket is digital. No paper ticket is needed: enforcement officers can check the validity of the parking session in real time.

The general rule is 30 minutes free of charge. After this period, the vehicle must leave the space to ensure turnover between users. Authorised zero-emission vehicles receive an additional 30 minutes. SPRO therefore operates based on rapid turnover.

Key purpose: *Optimising existing facilities rather than increasing the number of delivery zones*

Curbside parking space is scarce, highly contested and difficult to expand. Alongside the deployment of areaDUM, Barcelona did not significantly increase the number of delivery zones, as the city already had an extensive network of dedicated loading and unloading spaces. The main innovation was therefore not the large-scale creation of heavy infrastructure or costly sensors, but improving the network's effective capacity through a relatively light digital solution based on smartphones, geolocation, and digital validation. This approach enabled better control of parking durations, closer monitoring of compliance and more flexible management of public space.

Benefits for delivery drivers

In addition to generating a digital ticket, SPRO enables predictive management. The application allows users to locate DUM spaces by geolocation, consult regulation schedules and obtain an occupancy forecast for spaces. Users can enter their destination and expected arrival time; the application then displays a probability of availability. The application does not guarantee that a specific bay is available upon arrival (not real-time data)

The tool aims to reduce the time spent searching for a space, limit irregular parking and produce data useful for planning.

Benefits for the public authority

For the City of Barcelona, each session generates data: vehicle, zone, start time, end time, duration, type of operation and usage history. These data help better understand actual delivery demand, saturated zones, peak hours, and non-compliance behaviours.

Data generated by the system have made it possible to identify high-pressure areas, better understand delivery rhythms and develop models for predicting space availability. This represents an important step forward for planning, as cities rarely have detailed data on delivery practices and commercial vehicle stops.

Flexible regimes for non-freight professional users

Barcelona's curb management model includes a differentiated regime for professional users whose activities require longer curbside presence. While the standard DUM rule limits loading/unloading stops to 30 minutes, with an additional 30 minutes for zero-emission vehicles, some trades and professional bodies can access extended parking conditions through agreements with the municipality and B: SM (Barcelona de Serveis Municipals - municipal entity responsible for parking management and SPRO). Authorised vehicles may use DUM spaces for up to two hours during specific time windows and may receive a limited number of monthly permits for longer stays. This creates a more flexible model for activities such as construction, maintenance, vending or other service-based operations, while preserving the principle of curb turnover. For health professionals, the relevant mechanism is more often the professional parking card and special tariff in regulated green areas, rather than the DUM regime itself, unless the vehicle is engaged in goods distribution.

Project governance

The system is part of Barcelona's municipal urban freight distribution strategy to 2030 and is deployed at metropolitan scale through SPRO. Public governance is organised as follows:

- **SPRO is publicly owned and provided by the City of Barcelona**, which is listed as the app developer/publisher and is responsible for operating the service. Public sources describe the application as developed by Barcelona. However, Barcelona relied on external providers for specific development, maintenance and operational support tasks. The model should therefore be understood as a publicly led digital service, operated by B, with specialised software development and support partly contracted to private providers.
- **Barcelona de Serveis Municipals** (B: SM), the municipal entity responsible for regulated parking management, provides and operates the SPRO application.
- **The Barcelona Metropolitan Area** (AMB – Àrea Metropolitana de Barcelona) coordinates the metropolitan extension, the harmonisation of conditions and integration with metropolitan municipalities.
- Finally, metropolitan municipalities integrate their DUM zones into the common system, while retaining their local role in relation to public space and regulated parking.

Success indicators and model limitations

A tool effectively used by professionals

The main success indicator is the system's operational uptake. The number of downloads (more than 113,000 in 2017 and 49,000 users), the volume of digital tickets (15 million in 2017), and the amount of data produced (around 45,000 operations per day) show that a significant share of professionals use the system effectively. The model also has value in its capacity to transform delivery parking, previously a poorly visible function, into an object of public management that can be measured and analysed.

Operational limitations

The model nevertheless has limitations. A significant share of deliveries continues to be made from vehicles parked outside DUM spaces. This suggests the system does not fully resolve the fit between space supply, delivery schedules, commercial needs, and carrier practices.

The municipal strategy highlights that SPRO remains partially underused: only around half of stops under 30 minutes are registered, and 75% of stops under five minutes do not trigger a session. Very short stops, informal practices and some non-compliant behaviours therefore remain difficult to capture.

The SPRO model, limited to 30 minutes, is poorly suited to some HORECA rounds (hotels, restaurants and cafés): carriers may serve multiple clients within a dense perimeter, and therefore from a single space, which makes the 30-minute limit (or one hour for electric vehicles) too restrictive.

Model development

The DUMH-BCN pilot: *HORECA-reserved spaces with targeted occupancy monitoring*

The most recent and loading-management-specific innovation is the DUMH-BCN pilot (Distribució Urbana de Mercaderies HORECA – Barcelona), focused on HORECA deliveries around Plaça Reial. It is led by the UOC (Universitat Oberta de Catalunya) and ADISCAT (Associació d'Empreses de Distribució i Logística de Begudes i Alimentació de Catalunya), in collaboration with the City of Barcelona, under Barcelona Innova Lab Mobility.

The objective is to reduce double parking and pavement parking, with an 18-month pilot planned for 2026.

Compared with the general SPRO model, this pilot adds two specific features: **spaces exclusively reserved for a specific logistics sector, HORECA**, and a **more targeted technological system for monitoring the actual occupancy of these spaces.**

Development ambitions in Barcelona

Through its EDUM 2030 strategy, the city is gradually developing a broader portfolio of measures: increasing regulated delivery time slots by 20%, introducing more flexible curb uses, improving enforcement, monitoring freight flows, encouraging night deliveries, adapting to Superblocks, and linking with micro-hubs or car parks used as logistics points. Barcelona is evolving from a system of "delivery spaces controlled by an app" towards more dynamic curb management, combining time windows, uses, data, enforcement and integration with public space design.

The EDUM 2030 strategy sets several objectives: increasing the effective supply of DUM hours from 123,000 to 148,000 hours per day, reducing emissions related to DUM operations by 50%, reducing indiscipline associated with these spaces by 60%, and extending SPRO to 75% of metropolitan municipalities (Barcelona Regional, 2023).

Extension of the model beyond the municipality of Barcelona

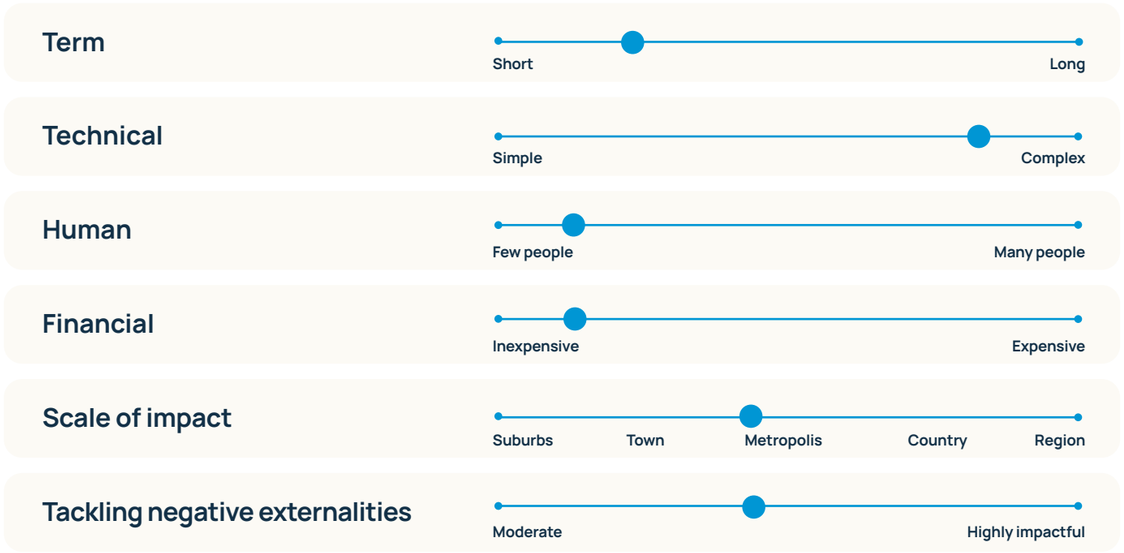
The model has already been extended beyond Barcelona. The EDUM 2030 strategy plans to further expand this coverage, aiming to increase the number of municipalities using SPRO from 10 to 27 by 2030, representing 75% of metropolitan municipalities.

Key learnings

The Barcelona case shows that curb management innovation does not necessarily require major infrastructure investment. Its main contribution is institutional and operational: it turns loading/unloading space into a managed public resource, supported by digital validation, enforcement, data analysis and metropolitan coordination. Its limits also show that a single standard rule cannot address all delivery profiles, which explains the move towards more sector-specific and flexible solutions such as DUMH-BCN.

For cities in the Global South, the main lesson from Barcelona is not to replicate SPRO as a fully digital system from the outset, but to adopt a phased approach to curb management. A first step can consist of mapping the most congested delivery hotspots, marking a limited number of loading/unloading areas, defining a simple time rule, and testing enforcement with a small group of professional users. Digital validation can then be introduced progressively, starting with areas where freight conflicts are most visible, such as central markets, wholesale districts, commercial streets or HORECA clusters. This is particularly relevant in contexts where urban freight is highly fragmented, partly informal and often dependent on small operators with limited administrative capacity.

Indicators



Other cases

Geography	Main relevance
Madrid Spain	Madrid provides one of the closest European comparators to Barcelona's SPRO model. The city uses a dedicated digital tool for urban goods distribution, allowing professional users to identify loading/unloading areas, activate a digital parking session, and access occupancy information. The model is relevant because it shows how a large city can move from static loading bays towards a more data-informed management system, combining digital validation, time limits and monitoring of curbside use. Compared with Barcelona, Madrid places greater emphasis on real-time occupancy data and integration with the city's broader low-emission and sustainable mobility agenda.
Utrecht, Netherlands	Utrecht illustrates a lighter and modular approach to digital curb management. Through Parkunload, loading and unloading areas can be managed with variable rules depending on location, time of day, type of vehicle or user profile. The model's relevance lies in its flexibility: municipalities can adjust access conditions without heavy physical infrastructure, using digital validation to improve turnover and compliance. This makes the model useful for cities seeking to test dynamic curb rules before investing in more complex sensor-based systems.
Belgium	The Belgian model illustrates a simple and flexible approach to temporary curb allocation. Individuals or professionals can request the temporary reservation of public space for a delivery, moving operation, works, scaffolding, a lift or a container. This is less a daily freight management system than an administrative tool for preventing informal or illegal occupation of the curb. Its relevance lies in its simplicity: it provides a legal and planned way to allocate curb space for occasional high-impact needs, without requiring a complex digital freight platform.
Paris France	Paris is relevant for its time-based use of delivery spaces. Since 2010, some delivery zones have been "periodic": they are reserved for deliveries during the day but can be used for general parking at night, on Sundays and on public holidays. This model illustrates temporal flexibility in curb management, allowing the same space to serve logistics needs during commercial hours and residential or general parking needs outside delivery periods. It is a useful example for cities seeking to optimise curb use without permanently dedicating more street space to freight.



Barcelona
Photo: Logan Armstrong, Unsplash

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MobiliseYourCity is a global partnership supporting cities and countries in developing and emerging economies to turn sustainable urban mobility planning into concrete investment and action. Backed by the European Union, France and Germany, and working with implementing, finance and knowledge partners, it helps members develop investment-ready mobility pipelines aligned with climate ambition, urban development priorities and local needs.

Over the past decade, the Partnership has grown to 82 member cities and 16 member countries, supporting 75 projects across 38 countries, identifying over EUR 30 billion in sustainable urban mobility investment needs and leveraging EUR 4.4 billion for SUMP and NUMP implementation. As it enters its second decade, MobiliseYourCity is shifting from proof of concept to scaled delivery by accelerating implementation, strengthening investment alignment, expanding practitioner knowledge and mobilising broader support for sustainable mobility.