



WORLD  
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FORUM

# Lessons from the Last Mile: Evolving Practices for Urban Logistics

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## Disclaimer

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In 2024, the World Economic Forum, in collaboration with Accenture, published *Transforming Urban Logistics: Sustainable and Efficient Last-Mile Delivery in Cities*, warning that the rapid growth of e-commerce could soon overwhelm urban infrastructure without urgent intervention.

If current trends continue, urban deliveries are expected to grow 78% by 2030 compared to 2019 levels. This surge would drive a 32% increase in carbon emissions by 2030, while the number of delivery vehicles on already congested roads could increase by 36%. The consequences of such inaction are steep: more pollution and congestion, undermining the quality of life in cities.<sup>1</sup>

To address this challenge, the report outlined a shared action agenda for last-mile delivery. It calls on both public and private actors to:

- Electrify delivery fleets at scale
- Reconfigure curbsides and delivery zones
- Expand use of urban consolidation centres and micro hubs
- Shift to micromobility and non-motorized options
- Reform regulatory frameworks and enable data sharing

Building on this action agenda, leading retailers, logistics providers and technology firms have endorsed the *Urban Deliveries Ambition Statement*,<sup>2</sup> pledging to accelerate the transformation of urban deliveries through a commitment to developing shared infrastructure and opening up new forms of data collaboration, while also directing capital into the shift towards zero-emission operations.

These initiatives are supported by the *Innovation Impact Alliance*. The Alliance is an initiative of the World Economic Forum's Centre for Urban Transformation, which brings together innovation ecosystems to spark cross-regional partnerships and to showcase lessons from local projects, inspire action and scale world-leading models and solutions.

This document highlights five key *solution areas* for sustainable last-mile logistics, each illustrated with a real-world promising practice. The *solution areas* represent a strategic approach that addresses specific challenges in urban logistics transformation, while the *promising practices* represent real-world implementations that show potential for impact based on early results but may still be evolving. These practices are presented for learning and adaptation as cities and companies experiment and scale new approaches.

Solution area	Promising practice	City
● Off-hour deliveries	NYC's Off-hour Deliveries programme	New York City, United States
● River-based urban deliveries	IKEA's Seine River Delivery programme	Paris, France
● Pedestrianizing deliveries	Amazon's Walker on Zone Dispatch	London, United Kingdom
● Smart infrastructure for fleet electrification	Posten Bring's Smart Electrification	Norway
● Micromobility for urban deliveries	iFood's Pedal programme in Brazil	Brazil

## Each of these practices explore:

### Snapshot

The policy or project at a glance, including its goals, the specific problem it addresses, local context and alignment with broader sustainability frameworks.

### Implementation

Description of timelines, technological choices, pilot phases, stakeholder engagement, financing and regulatory facilitators.

### Stakeholders involved

The private and public actors involved, and groups from civil society.

### Impact

Quantifiable outcomes (CO<sub>2</sub> saved, delivery times improved, cost reductions) and qualitative impacts (public space use, courier and resident experience).

### Takeaways

Lessons learned, contextual considerations and recommendations for adapting or scaling the initiative elsewhere.

As cities and companies move from ambition to implementation, these interventions illustrate the practical challenges and trade-offs involved in redesigning urban delivery systems to reduce impact while maintaining operational viability.



PROMISING PRACTICE

## Scaling Logistics Beyond Peak Hours: Off-hour Deliveries in New York City

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Prepared by the World Economic Forum's Centre for Urban Transformation in partnership with the New York City Department of Transportation (NYCDOT), this promising practice highlights the city's Off-Hour Deliveries programme, which shifts freight to off-peak hours through legal mandates, freight planning, incentives and technical support – reducing daytime congestion and emissions across sectors.



## Solution area: Off-hour deliveries

Rising freight demand puts pressure on daytime streets, as trucks compete for limited curb space – slowing traffic, increasing idling emissions and heightening conflicts with pedestrians and cyclists. Off-hour deliveries address this by shifting the movement of goods to evenings and nights, when streets are quieter and loading space is more available.

Cities worldwide are adopting such measures: Transport for London has retimed deliveries at hundreds of sites with

quiet-delivery practices;<sup>3</sup> Utrecht and Amsterdam use noise-sensitive delivery windows and consolidation centres to enable low-impact night access; and Barcelona is expanding night unloading through streamlined, acoustic-based permits.<sup>4</sup>

This promising practice examines the New York City Off-Hour Deliveries (OHD) programme, one of world's most extensive. Launched as a pilot in 2009, it has grown into a citywide strategy embedded in climate and mobility plans.



## Promising practice: New York City's OHD programme

### Snapshot

Trucks carry about 325 million pounds of freight through New York City each year, and the New York City Department of Transportation (NYCDOT) projects this will grow by 70% by 2045. This growth creates competition for limited street and curb space, reinforcing the need to manage freight demand more efficiently.<sup>5</sup> The New York City OHD programme supports this by retiming certain freight movements outside

daytime peaks, typically between 19.00 and 06.00. Starting as a voluntary pilot with 25 receiving and eight transporting businesses, the programme grew to 1,100 city-wide locations by 2021, when financial incentives were added. With congestion pricing and a 75% overnight truck toll discount taking effect in 2025, OHD is positioned as a key framework for freight operators, with funding secured through 2029.<sup>6</sup>

### Objectives

The OHD programme supports NYC's broader objectives:



#### Environment:

- Lower greenhouse gas (GHG) emissions, aligning with the city's aim to limit total emissions by 80 percent by 2050.
- Support energy-efficient, low-carbon operations, consistent with OneNYC's broader strategies.<sup>7</sup>



#### Safety:

- Improve street safety by reducing daytime crash risks and conflicts with pedestrians and cyclists, when 80% of serious or fatal truck-related crashes occur.



#### Economy:

- Foster economic resilience by easing daytime congestion and avoiding the nearly \$1 billion in annual costs of congestion by 2045, as projected by the NYC Economic Development Corporation.



## Implementation

To achieve these goals, New York City elevated the OHD programme from a small pilot to a citywide priority, embedding it in climate and mobility strategies and backing it with financial and institutional support.

### Framework and policy

The OHD programme has been formalized through legislation, strategic plans and dedicated funding.

#### Legislation

Two local laws provide OHD's regulatory foundation. Local Law 189 (2017) mandated comprehensive congestion studies and OHD feasibility assessments. Building on this, Local Law 184 (2019)<sup>9</sup> required evaluation of OHD's feasibility at municipal facilities and set new location targets: 1,500 by 2021 and 5,000 by 2040. These measures shifted the programme from departmental pilot to city priority, embedding legal accountability into expansion.

#### Strategic plans

Three key municipal plans anchor OHD: OneNYC Strategic Plan<sup>9</sup> (2016) committed to 900 new locations as part of citywide congestion reduction;<sup>10</sup> the Delivering Green: Sustainable Freight Network Report<sup>11</sup> (2021) formalized the 1,500-location target by 2021 and established a mayoral commitment; and Delivering New York: Smart Truck Management Plan (2021), which embeds OHD within comprehensive 5-10 year freight management objectives.



#### Funding

A total of \$11 million in funding creates a financial foundation through 2029. A federal Congestion Mitigation and Air Quality (CMAQ) grant of \$6 million awarded in 2021 enabled the launch of a business incentives programme, while the Metropolitan Transportation Authority's (MTA) Commercial Business District Tolling revenue provides \$5 million in sustained funding starting in 2025.

## Timeline

The OHD programme’s evolution demonstrates systematic scaling from pilot to citywide implementation.

Year	Milestones
2009	– Pilot launched in Manhattan with 25 receivers and eight transporters, generating initial feasibility data.
2016	– Publication of OneNYC, marking an official commitment to expand to new locations.
2019	– NYCDOT launched a citywide marketing effort, including site banners, email outreach and LinkedIn promotion. – By the end of the year, OHD reached 700 locations.
2020	– Amid COVID-19 disruptions, NYCDOT collaborated with the Department of Citywide Administrative Services (DCAS) to coordinate municipal off-hour deliveries. – Despite the pandemic, the programme grew to 904 locations. <sup>12</sup> – NYC’s 311 system was integrated to manage public inquiries, support new participants and address noise concerns.
2021	– Federal CMAQ funding secured, enabling expansion to 1,114 locations with enhanced technical assistance. <sup>13</sup>
2023–2025	– NYCDOT built out the OHD Incentives Programme, which offers one-time monetary incentives to businesses to ease common barriers to adoption. <sup>14</sup> – The MTA’s congestion pricing tolling programme went live, creating a secondary source for the city to fund the incentives programme, and channelling sustained funding into programme growth. <sup>15</sup>
2026	– Implementation of the incentives programme through 2029 and broader marketing outreach will continue.

### Incentives programme

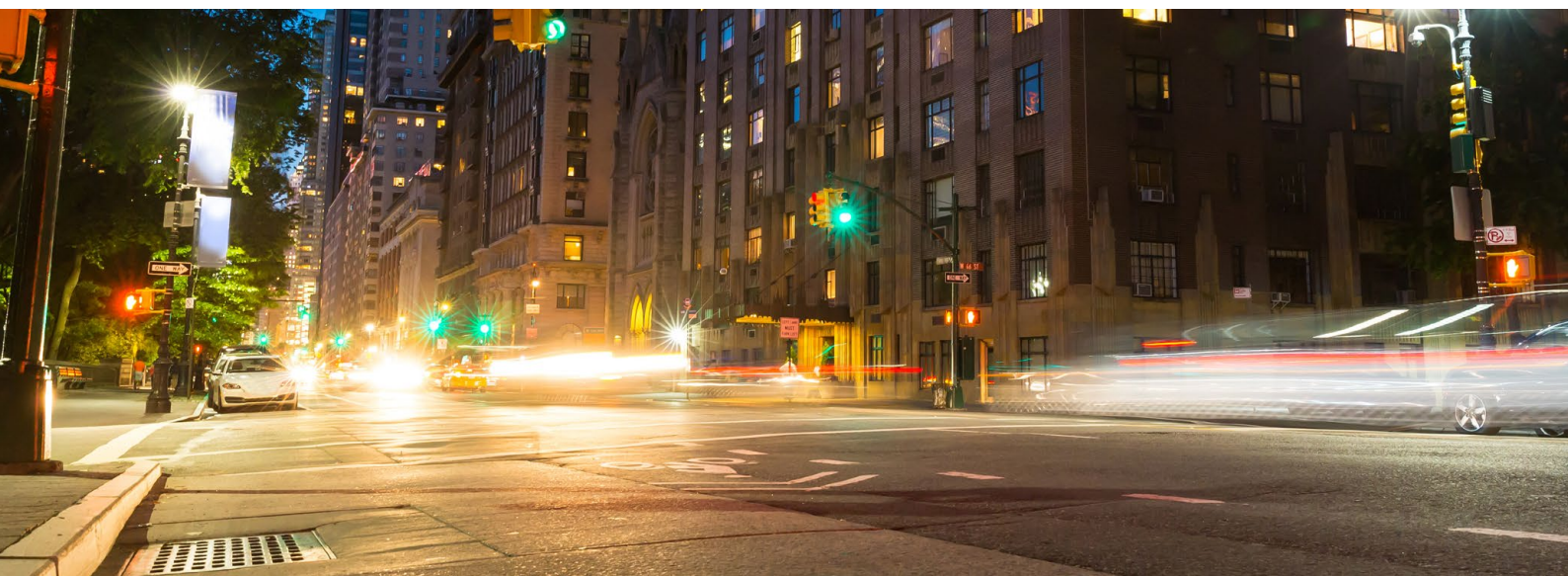
To support adoption, NYC launched the OHD Incentive Programme in 2024, offering one-time reimbursements to businesses that commit to at least one year of off-hour deliveries for a portion of their operations. The incentives framework addresses two adoption barriers identified in pilot research: financial constraints for smaller businesses and safety concerns around unattended deliveries.<sup>16</sup>

Eligible expenses for participating businesses include building access and security systems, low-noise cargo handling equipment and sustainable delivery modes, such as electric vans and cargo bikes.<sup>17</sup> The first application window ran from August to November 2024. Small and mid-sized businesses are especially encouraged to apply. However, businesses of all sizes are eligible. Operational data collected from selected participants will inform future phases and track the effects of shifting to off-hours.

### Outreach and engagement






Outreach has been continuous throughout the programme’s development. Strategies include social media campaigns, press releases, door-to-door outreach, printed materials and webinars for prospective participants. Since 2018, the dedicated OHD website has provided resources for businesses and carriers. Webinars were expanded in 2024 to coincide with the launch of the incentive programme.<sup>18</sup>

NYCDOT maintains regular communication with programme partners to track participation and address concerns. This includes standing meetings with long-term partners and ongoing support through email and the 311 system.<sup>19</sup>



## Stakeholders involved

NYC's OHD relies on broad partnerships: city, state and federal agencies set rules, provide funding and enforce compliance; consultants oversee outreach and data; businesses adjust delivery times and offer feedback; community boards and industry groups represent neighbourhoods and trucking interests; and academic institutions track results and recommend improvements.

Sector/level	Type of stakeholder	Role in programme
<b>Public sector – city</b> 	<b>Municipal transport and planning teams</b>	Draft regulations, oversee curbside use, manage outreach, coordinate across departments
	<b>Procurement and facilities agencies</b>	Align city-owned fleets and buildings with off-hour delivery requirements
	<b>Environmental and enforcement units</b>	Monitor and respond to noise complaints, provide mitigation guidance, ensure compliance
<b>Public sector – Regional/federal</b> 	<b>State/regional transport authorities</b>	Provide funding (e.g. grants, toll revenue), ensure regulatory compliance, supply regional freight data
<b>Private sector</b> 	<b>Logistics consultants and contractors</b>	Deliver technical support, administer incentive schemes, run data collection
	<b>Businesses and carriers</b>	Retime deliveries, invest in equipment upgrades, share operational cost/benefit data
<b>Industry/civil society</b> 	<b>Business districts and trade groups</b>	Aggregate business participation, mediate with carriers, channel neighbourhood feedback
<b>Academic and research</b> 	<b>Universities and research centres</b>	Conduct evaluations, collect performance data, advise on programme design



# Impact

The OHD programme is estimated to deliver measurable benefits across congestion, business efficiency and environmental performance.

## Congestion

**29%** faster average speed on off-peak trips compared to peak hours<sup>20</sup>

**17 minutes saved** on every 60-minute trip when driving off-peak<sup>21</sup>

**Up to 1.5 hours** reported saved on full evening trips<sup>22</sup>

## Business

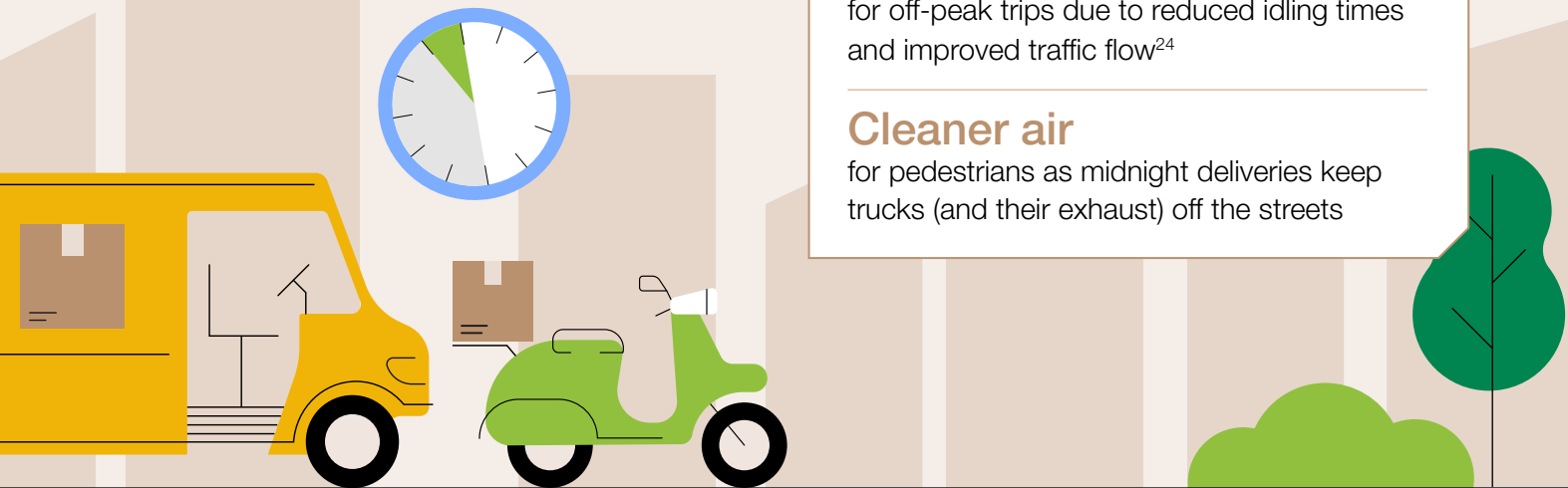
**Over 1,000 locations** receiving overnight truck deliveries

**\$9.47 labour savings** for every driver-hour shifted off-peak<sup>23</sup>

## Environmental

Up to **15-18% less** GHG emission for off-peak trips due to reduced idling times and improved traffic flow<sup>24</sup>

**Cleaner air** for pedestrians as midnight deliveries keep trucks (and their exhaust) off the streets



Sources: NYCDOT (2023), Bureau of Labor Statistics (n.d.), EPA (2025)



# Takeaways

NYC's OHD programme evolution from a small Manhattan-focused pilot to a city-mandated strategy offers transferable lessons for other jurisdictions seeking to modernise urban logistics. The following takeaways distil key insights from NYC's experience.



## Strategic planning and institutional framing

The programme demonstrates the importance of embedding freight management within broader urban planning frameworks. Its success stems from its integration into mayoral strategic plans (OneNYC), formal legislative mandates (Local Laws 184 and 189) and comprehensive mobility strategies.

**Takeaway:** Durable freight policy depends on legal mandates and alignment with city strategies, supported by dedicated staff and inter-agency coordination.



## Operational design

Evaluations of the pilot found that businesses able to support unattended deliveries reported the greatest efficiency gains. Many businesses, however, are reluctant to adopt this model because of liability concerns related to building access, theft, and handling of perishable or high-value goods. Knowledge gaps also remain around smart access systems and secure

building entry. Larger facilities, with over 250 employees, have more capacity to manage these risks.

**Takeaway:** Targeted support and guidance around liability, security and smart access systems help expand adoption safely and effectively.



## Noise control issues

Noise complaints present one of the most pressing challenges for community support, with NYC 311 data showing increases in vehicle noise complaints during overnight hours between 2019-2021.

**Takeaway:** Mitigating noise through equipment incentives, outreach and community engagement helps sustain public support. Programmes can also track noise complaints longitudinally, assess whether mitigation reduced complaints over time. Publishing complaint trends and resolutions also helps make informed decisions over time.



## Driver safety

The OHD report revealed safety and security challenges for off-hours drivers, including law enforcement stopping, rising crime such as vehicle theft, safety concerns from unhoused individuals blocking building access, increased presence of rodents and pests, and poor lighting conditions, particularly for basement deliveries, that create safety risks for drivers.

**Takeaway:** Off-hour delivery programmes work best when addressing driver safety and security concerns through coordination with law enforcement, improved lighting infrastructure, security protocols and clear guidelines for safe overnight operations.



## Financial incentives

NYC's approach evolved to include monetary incentives for businesses to purchase low-noise equipment, alternative delivery modes and security systems based on the pilot's findings.

**Takeaway:** Financial incentives can encourage wider adoption and help smaller businesses overcome cost barriers to effective OHD implementation.



## Infrastructure

The programme faces challenges with curb management, including regulations that permit loading during the day but revert to parking overnight, reducing available loading zones. Illegal parking behaviour and lease agreement restrictions further complicates implementation.

**Takeaway:** Designating 24-hour loading access in key areas, enforcing against overnight parking and aligning building access rules with delivery needs enables smoother off-hour operations.

# Conclusion

Scaling off-hour logistics offers a way for cities to relieve daytime congestion by shifting freight activity into less busy hours. The New York City programme demonstrates what it takes to make that shift work in practice: regulation that enables access, incentives that motivate businesses and planning that coordinates both. The experience shows that while the approach can reduce pressure on streets, its wider use depends on managing operational hurdles such as noise, driver safety and liability.

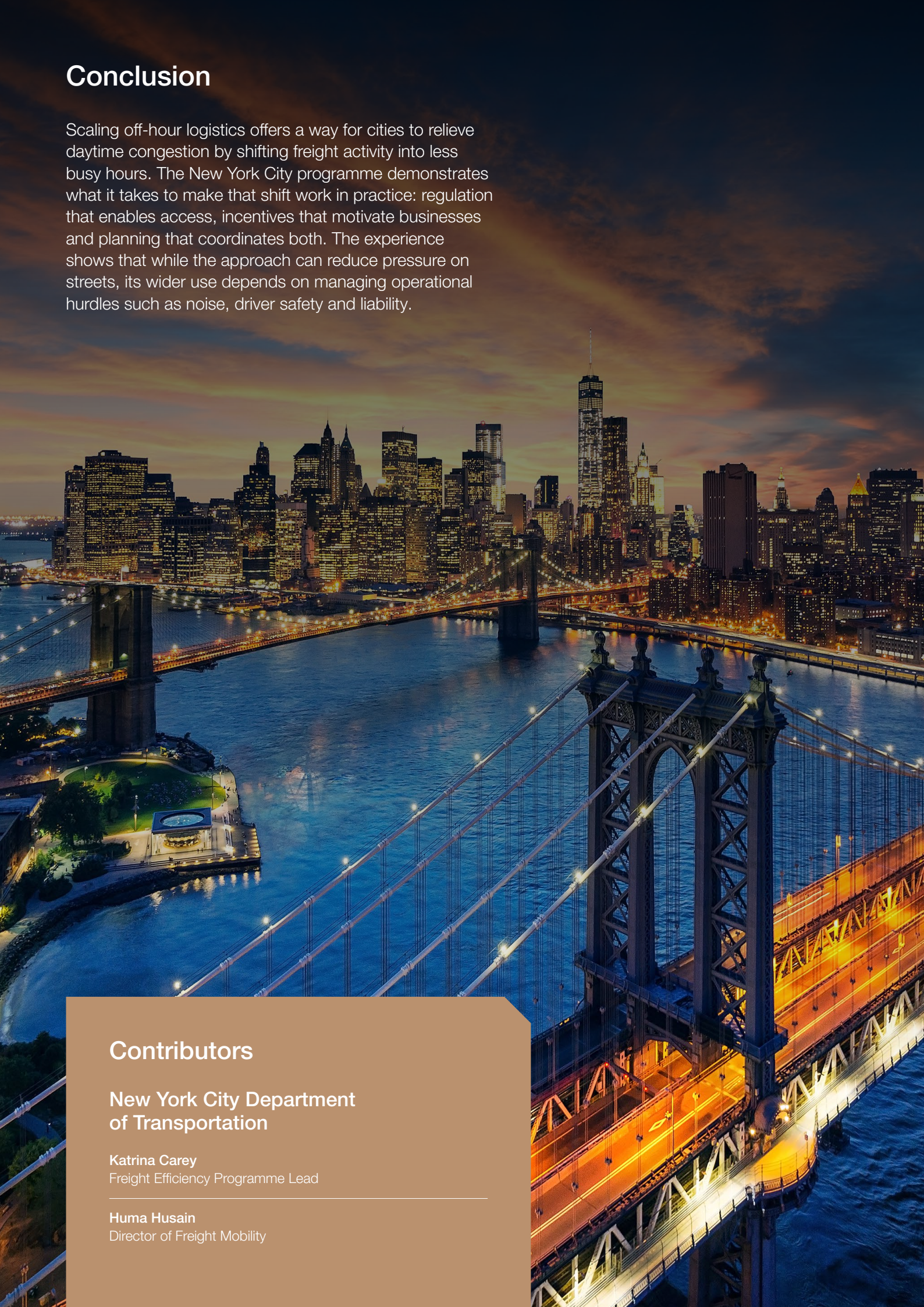
## Contributors

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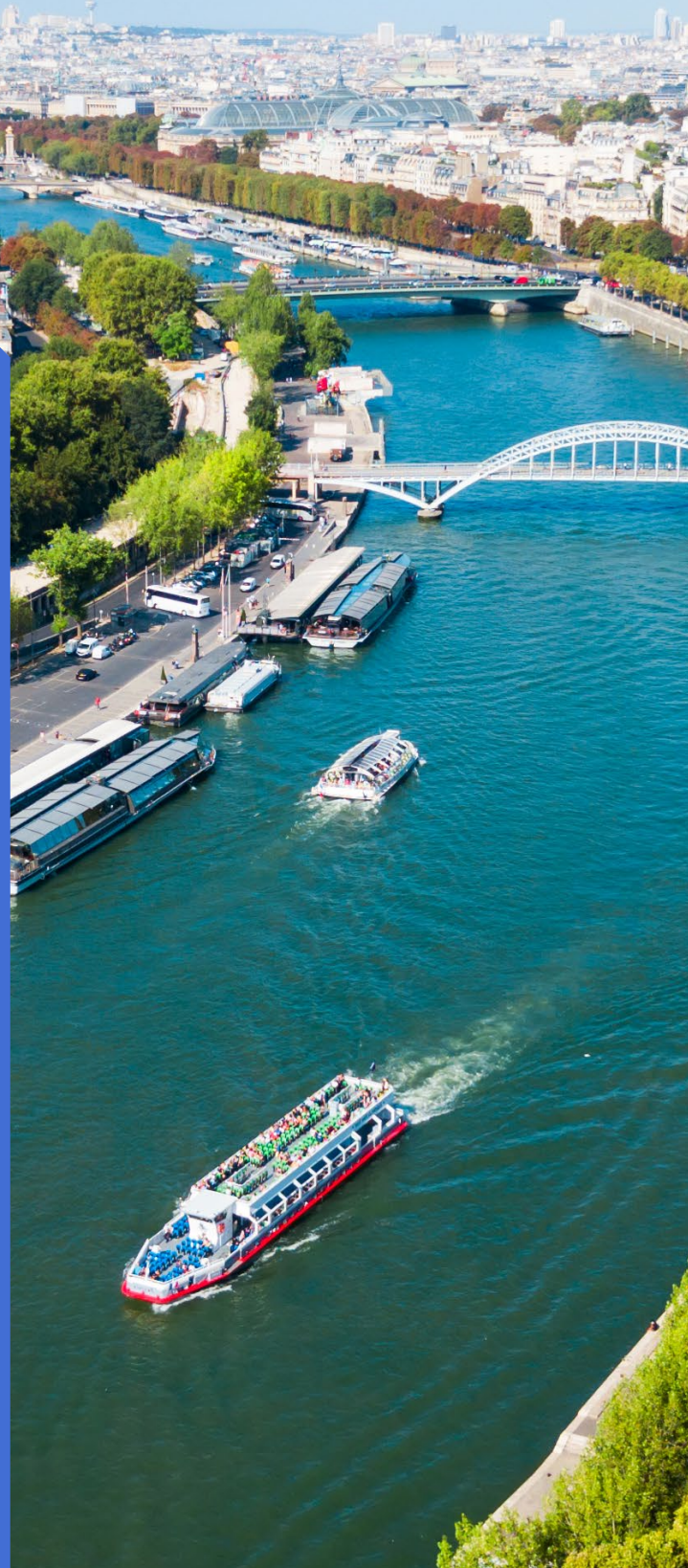


PROMISING PRACTICE

## Unlocking Urban Waterways: IKEA's Seine River Delivery Programme

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Prepared by the World Economic Forum's Centre for Urban Transformation, in partnership with Ingka Group, this promising practice highlights IKEA's Seine River delivery programme. By moving goods via barges and using electric vans for the last mile, the programme offers a potential model for cities and companies to reduce urban congestion, advance climate neutrality goals and stay competitive.



# Solution area: River-based urban delivery logistics

Across Europe, there is a push to find innovative solutions to growing congestion and emissions from urban freight. Shifting freight from roads to rivers by tapping into underused waterways is considered a promising option. The EU's Sustainable and Smart Mobility Strategy aims to increase inland waterways and short-sea shipping by 25% by 2030 and 50% by 2050.<sup>25</sup>

Some cities are already pioneering this approach. London runs a daily parcels boat into the city centre,<sup>26</sup> while Dutch cities are expanding water transport – from e-pushers for urban logistics to canal freight pilots in Amsterdam.<sup>27</sup> Emerging programmes

find strong potential when waterways are paired with bike or EV last mile, provided quayside access, scheduling and handling are designed well.<sup>28</sup>

This promising practice examines IKEA France's Seine delivery programme, which is its first multimodal solution for home deliveries.<sup>29</sup> Using barges to transport goods into Paris, coupled with electric vans for the last mile, this case offers lessons for retailers, policy-makers and logistics providers on how to potentially shift deliveries onto the underutilized urban waterways of Europe.



## Promising practice: IKEA's Seine River Delivery Programme

### Snapshot

With 27% of IKEA France's sales conducted online, the Seine River Delivery Programme offers a scalable solution for managing growing e-commerce and home-delivery demand. Operating daily between the Gennevilliers warehouse (15 km from Paris) and the Port of Bercy, it uses electric vehicles in central Paris, and handles about 300 orders per day with swap containers across 360 days a year.<sup>30</sup>

The programme has grown steadily since its launch in December 2022, supported by strategic partnerships and new infrastructure. It is scheduled to expand to suburban areas in

2027 with a new port at Limay-Porcheville, where IKEA France also plans to introduce decarbonised boats.<sup>31</sup>

This initiative is part of Ingka Group's wider zero-emission transition. In 2024, 41.1% of its retail deliveries worldwide (more than 6.3 million) were made with zero-emission vehicles, up from 24.6% the year before. The company has already reached 100% emissions-free delivery in 20 cities globally.<sup>32</sup> In Paris, 85% of IKEA's truck deliveries are now electric, with the river delivery programme helping to make this possible.<sup>33</sup>

### Objectives

IKEA's river delivery programme supports three broader objectives:



#### Environment:

- Cut emissions from freight and phase out diesel vans in central Paris<sup>34</sup>
- Reduce noise, truck traffic and air pollution during busy hours
- Support Ingka Group's goal of 90% zero-emission home deliveries by 2028 and align with EU climate targets<sup>35</sup>



#### Operations:

- Deliver goods within 48 hours, even under heavy congestion
- Increase load efficiency by replacing small trucks with high-capacity barges
- Improve driver well-being by reducing time spent in traffic



#### Regulation:

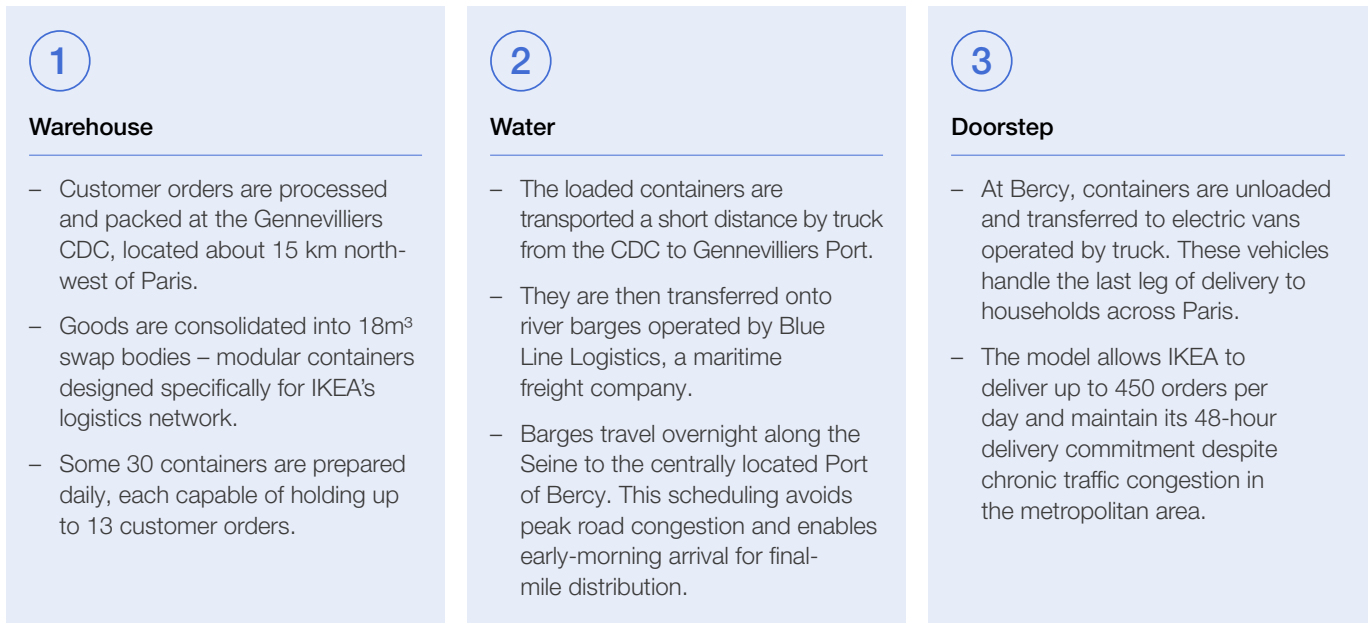
- Align with Paris's low-emission zone plans and the EU's 2035 ban on combustion engines for road transportation

# Implementation

To meet these objectives, IKEA integrates river transport into a sequenced chain of operations, supported by new governance arrangements and close coordination with public and private partners.

## Operations

Operating 360 days a year, the programme runs in three stages: orders prepared at IKEA's Gennevilliers warehouse, shipped by barge along the Seine and delivered to homes by electric vans:<sup>36</sup>

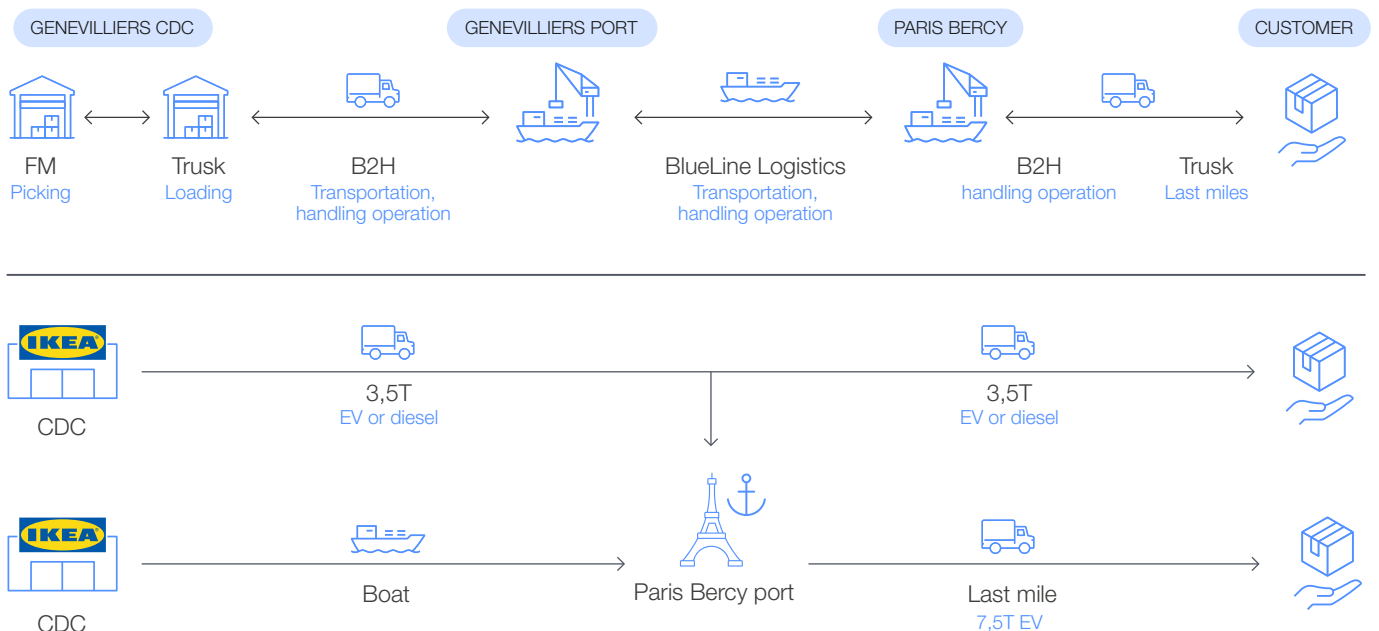


## Governance and partnerships

The logistics chain relies on strong public-private collaboration. Public authorities play a central role in enabling the programme. The Île-de-France region and Voies Navigables de France (VNF) funded early studies and pilots to reduce risk. VNF also provided technical guidance and now manages river traffic and lock usage. HAROPA Port Authority granted land and port access at Gennevilliers and Bercy and is preparing new facilities at Limay-Porcheville. The City of Paris approved

permits for quayside operations and adapted planning rules to allow container handling in dense urban areas.





Private partners bring in the operational expertise. Box2Home managed multimodal coordination, Blue Line Logistics oversee barge operations and Trusk provide the last mile with a fully electric fleet.

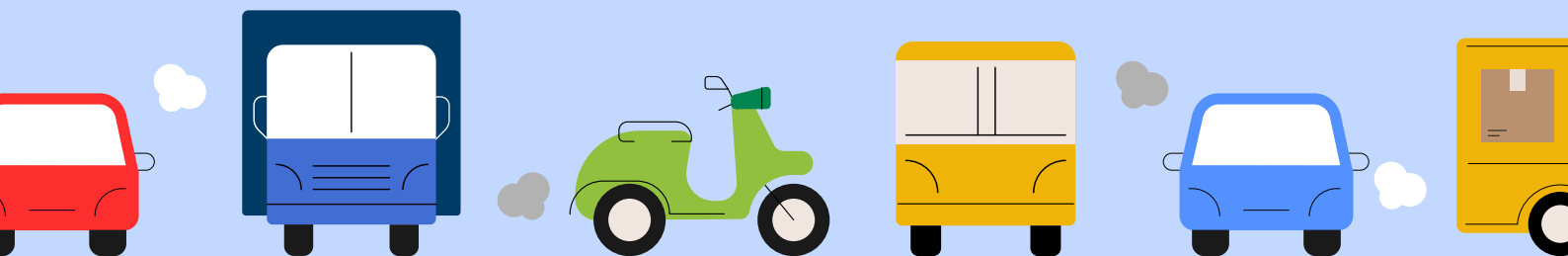




## Stakeholders involved

The system runs through a network of actors: public authorities manage rules and ports, logistics firms operate barges and the electric last mile, IKEA France integrates supply chains and industry groups push enabling policies

Sector/level	Type of stakeholder	Role in the river delivery programme
<b>Public sector</b> 	<b>Regional authority</b>	Provides financial support for feasibility studies and pilots, helps de-risk investment
	<b>National waterway manager</b>	Oversees river navigation, manages river traffic and ensures safety standards
	<b>Port authority</b>	Manages port facilities, allocates berths and plans long-term infrastructure upgrades
	<b>City administration</b>	Issues permits for quayside operations, integrates logistics facilities into urban planning
<b>Private sector – logistics</b> 	<b>Barge operator</b>	Provides river transport capacity and scheduling
	<b>Multimodal logistics coordinator</b>	Designs the interface between warehouse, barge and final-mile operations
	<b>Final-mile delivery operator</b>	Operates a fully electric fleet to serve customers in dense urban areas
<b>Private sector – retail</b> 	<b>Retailer</b>	Designs the programme, integrates it with the wider supply chain, and ensures customer service standards
<b>Industry/advocacy</b> 	<b>Industry alliances and advocacy groups</b>	Shares best practice, promotes enabling regulation and supports broader adoption of zero-emission logistics



# Impact

IKEA's Seine River delivery programme is estimated to demonstrate environmental, operational and economic benefits. Its performance data suggests reductions in urban truck traffic and emissions while maintaining delivery service standards across Paris's dense metropolitan area.

## Environmental

### Up to 5x fewer

CO<sub>2</sub> emissions per delivery than diesel vans

### Over 16,000

truck trips removed from Parisian roads

### Around 300,000 km

of road freight avoided each year

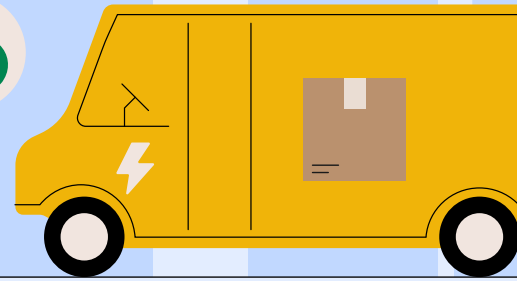
## Economic and operational

### Higher load efficiency

than comparable road-only movements

### 48-hour

delivery windows maintained



Sources: (Brussels Times, 2022<sup>37</sup>; Ingka, 2025<sup>38</sup>; VNF, 2025<sup>39</sup>)



# Takeaways



## Coordination

The transition from direct truck delivery to multimodal river logistics requires precise timing across multiple systems: ensuring swap bodies loaded at exactly the right time, barges departed on schedule and vans depart punctually to maintain 48-hour delivery commitments.

**Takeaway:** Effective multimodal freight depends on investment in coordination systems, real-time communication and dedicated project management, not just transport assets.



## Expertise

Running a multimodal river delivery system required capabilities – from river navigation to multimodal coordination and electric fleet operations – that IKEA France did not yet possess. Rather than building this expertise in-house, the company works with specialist logistics providers and relies on public authorities to de-risk pilots and provide infrastructure access. This approach allowed IKEA to move quickly and reduce uncertainty.

**Takeaway:** New modes often demand new skills. Partnering with specialized institutions and public agencies helps companies bridge knowledge gaps, accelerate rollout and reduce investment risks.



## Modular swap bodies and scalability

Box2Home designed customized swap bodies that fit both the barges and the electric vans, ensuring smooth handling at the harbour without unloading individual items. These keep goods protected from the weather, reduces handling time and lowered the risk of damage. The system also makes scaling easier, with swap bodies transferable across vehicles and ports.

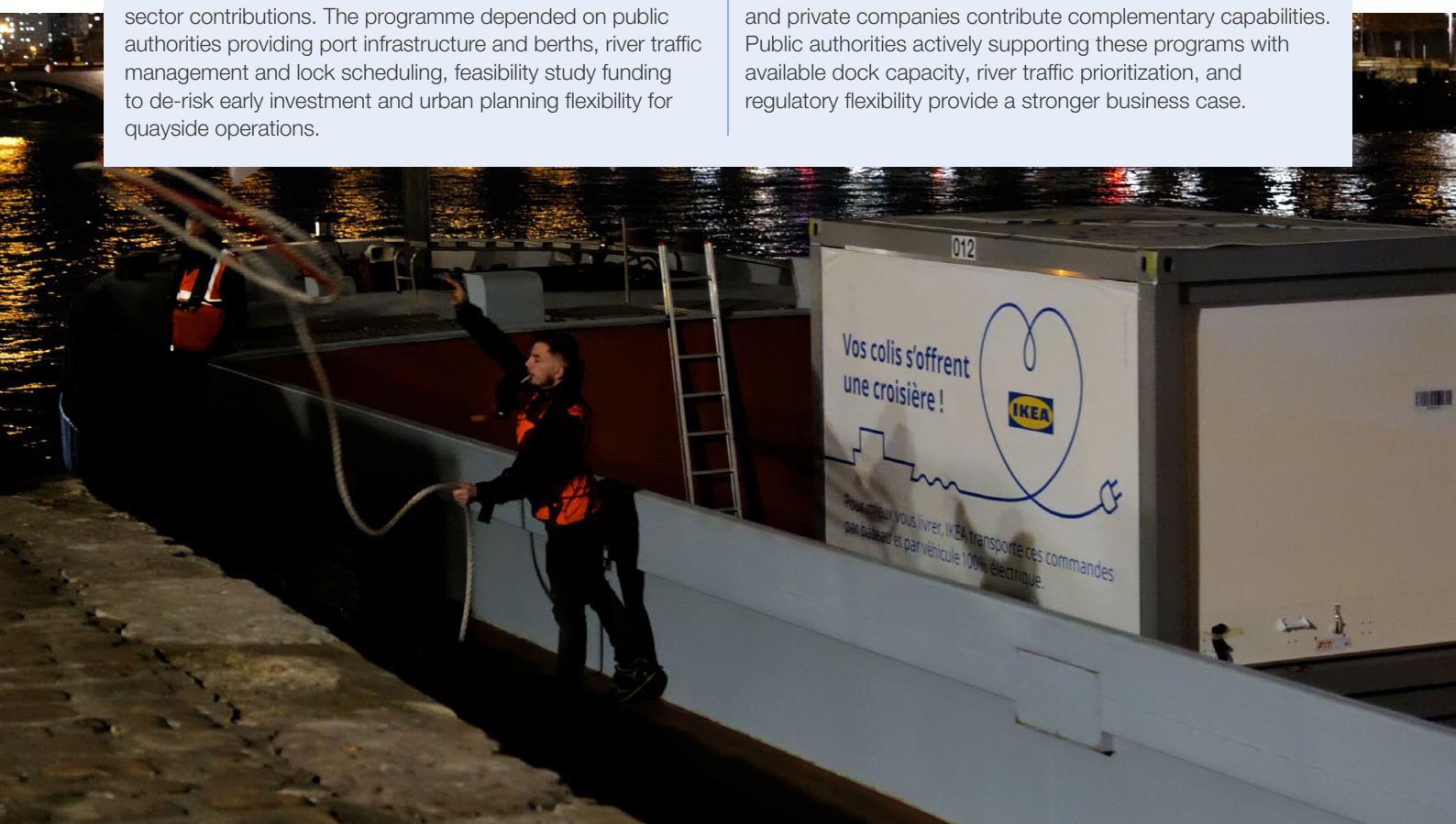
**Takeaway:** Standardized containers make multimodal operations replicable. IKEA's swap-body system shows how modular assets could allow waterborne delivery to easily scale in other cities.



## Collaboration

River logistics requires coordinated public and private sector contributions. The programme depended on public authorities providing port infrastructure and berths, river traffic management and lock scheduling, feasibility study funding to de-risk early investment and urban planning flexibility for quayside operations.

**Takeaway:** River logistics succeeds when public authorities and private companies contribute complementary capabilities. Public authorities actively supporting these programs with available dock capacity, river traffic prioritization, and regulatory flexibility provide a stronger business case.



# Conclusion

Urban rivers are increasingly recognized as underused freight corridors that can relieve pressure on crowded roads, cut emissions and link seamlessly with last-mile solutions. The Seine case highlights how these waterways can potentially shift from overlooked assets to part of a city's logistics backbone. By pairing barges with electric vans, IKEA France has tested an approach aligned with regulatory trends and customer needs. Its progress rests on precise planning and public-private coordination. For other cities, it offers a scalable blueprint to learn from, showing how river logistics can complement existing systems and support cleaner, more integrated urban delivery.

## Contributors

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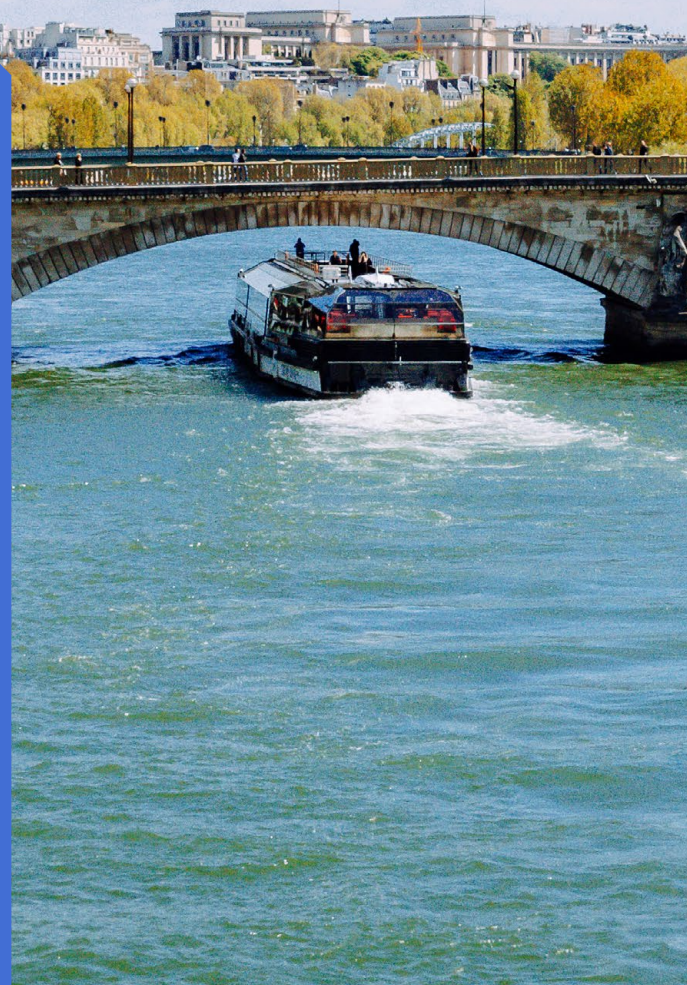
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PROMISING PRACTICE

## **Pedestrianizing Deliveries:** Amazon's Walker On-Zone Dispatch in London

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Prepared by the World Economic Forum's Centre for Urban Transformation in partnership with Amazon, this promising practice highlights London's Walker On-Zone Dispatch (OZD) pilot, where porters on foot replace last-mile delivery vans.

# Solution area: Pedestrian deliveries

Rising delivery volumes clog cities with traffic and emissions. In dense centres, delivery drivers in vans and trucks can spend up to 28% of their trip searching for parking, with circling and idling adding to congestion and pollution.<sup>40</sup> To solve this, cities and operators are piloting alternatives – such as pedestrian delivery.

Some cities are already adopting a pedestrian delivery model. In Tokyo, pushcarts are a standard sight on streets too narrow for vans. Paris and Vienna are also expanding pedestrian

deliveries, while in New York City, couriers can be seen pushing e-carts in congested areas.<sup>41</sup>

This promising practice examines London's Walker On-Zone Dispatch (OZD) pilot, where stationary vans serve as anchor points for foot-based parcel delivery using pushcarts. With parcel volumes in the UK hitting 3.9 billion in 2024 – close to pandemic peaks – central London's high demand and limited curb space make it a strong testbed for walking-based delivery models within broader urban policy efforts.



## Promising practice: Amazon's Walker On-Zone Dispatch (OZD)

### Snapshot

Launched in 2024, the Walker On-Zone Dispatch (OZD) pilot tested the viability of on-foot parcel deliveries, using a single 3.5-tonne van as a day-long anchor point to support 4-5 porters with pushcarts. Designed for high-density city centres, the model addresses traffic, limited parking and regulatory barriers to van-based logistics.

The pilot now operates in three London boroughs – Hackney, Westminster and Islington<sup>42</sup> – enabling over one million parcels

to be delivered on foot. It forms part of broader industry trials to reduce emissions in last-mile logistics, with 70% of London's Congestion Charge Zone already served by delivery partners using electric vans, e-cargo bikes, or walking porters.<sup>43</sup>

Although the pilot has produced early results, it also highlights the potential limits of walking logistics. The success of this model depends on the careful siting of anchor points and the right regulatory support.

### Objectives

The programme advances a wide array of objectives:



#### Environment:

- Cut vehicle trips, emissions and curbside idling in central London
- Align with Amazon's Climate Pledge to reach net-zero carbon by 2040<sup>44</sup>



#### Operations:

- Improve efficiency in dense areas where vans looking for parking lose time and increase emissions from idling



#### Policy:

- Align with London's growing low-emission and traffic-restriction measures through innovative solutions

### Implementation

The pilot showed that shifting deliveries to foot requires more than a new operational model – it depends on the right enabling conditions. Five levers proved decisive in shaping

outcomes: regulatory flexibility, anchor point operations, community engagement, adaptive feedback loops and a clear expansion trajectory.<sup>45</sup>

## Regulatory flexibility

Walking logistics depends on adapting to existing traffic and parking rules rather than building new infrastructure. Working with councils, Amazon agreed on bespoke arrangements to test whether kerbside space could host static delivery vans.

### Hackney

Introduced an Experimental Traffic Management Order (ETMO) to create a dedicated Last Mile Bay for up to 18 months, subject to statutory consultation.

### Westminster

Granted exemptions allowing OZD vans to park on single yellow lines within designated trial areas.

### Islington

Adapted its Universal Business Parking Permit, normally limited to vans under 2 metres using residents' or business bays, to allow delivery partners to operate 3.5-tonne anchor point vehicles for the pilot.



## Anchor point operations

OZD shifts the focus from moving vehicles to stationary hubs.

### Anchor point

A single 3.5-tonne van is parked all day at an anchor point, with the driver remaining on site to prepare and sort parcels.

### Walking porters

Four to five walking porters collect packages from the van using pushcarts, deliver them locally and return multiple times to reload until the van is cleared.



## Community engagement

Resident and business support is as crucial as permits. Councils embed consultation into trials and the community shapes where OZD operates.

### Consultation rules

Hackney's ETMO required testing the concept with residents and businesses to determine suitable locations.

### Site relocation and removal

Although most sites were supported by the local community, one anchor point was moved following residential proximity concerns and another was withdrawn.



## Adaptive feedback loops

Delivery partners test schedules, routes and site design daily. Their insights feedback to councils, which adjust permits in response, making the system more reliable.

### Operational testing

Delivery partners trialed porter schedules, pushcart routes and loading patterns.

### Permit refinement

Councils adjust conditions based on operational data and feedback.

### System reliability

Iterative learning reduced inefficiencies and created a template for replication.



## Expansion trajectory

The pilot has attracted interest from other cities and landowners. The next step is standardizing permits, so replication does not rely on bespoke agreements.

### Proof of concept

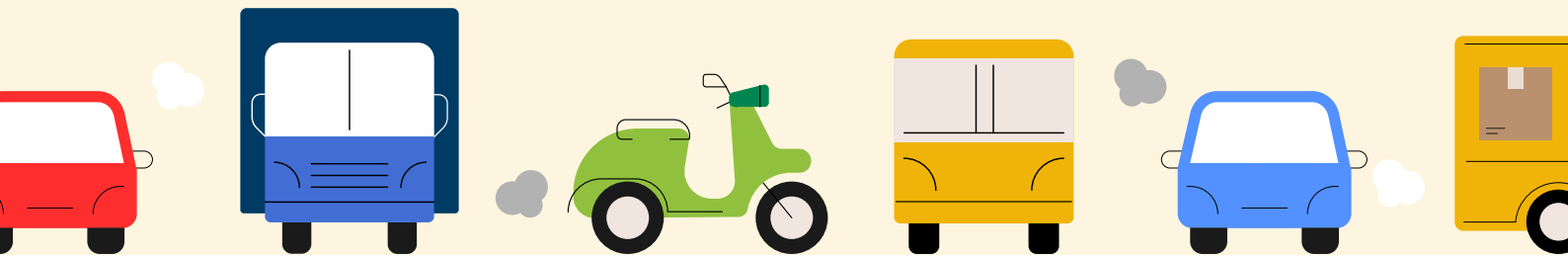
Over one million parcels delivered on foot in the first year.

### New interest

More than 10 councils are interested in hosting anchor points. Private landowners and parking operators are keen to collaborate.



### Next step

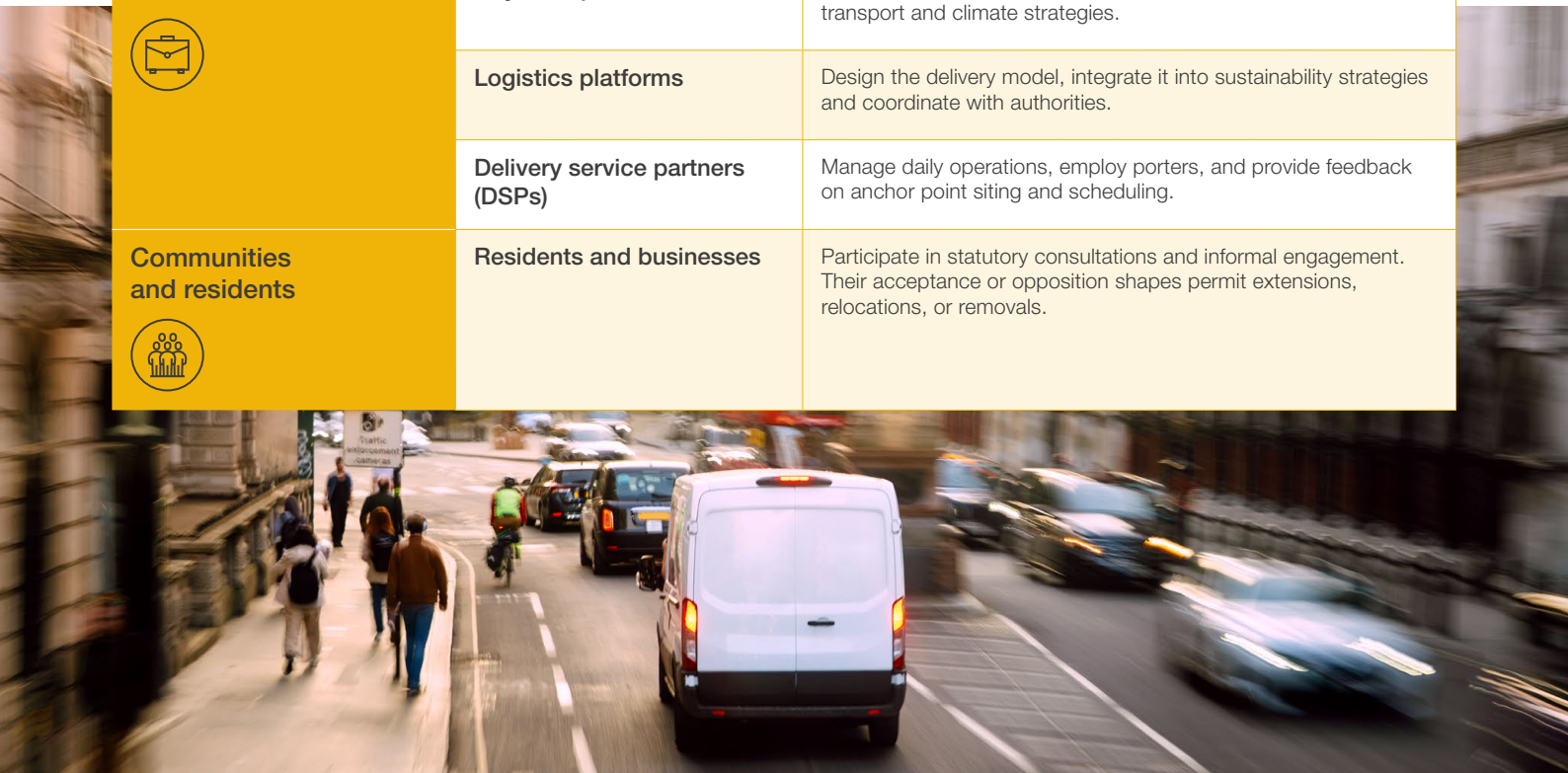
Amazon has identified Islington's Universal Business Parking Permit as a framework with potential for wider application and has shared this approach with other local authorities.



## Stakeholders involved

Delivering on foot required coordination across public authorities, private operators and local communities. The table below outlines the key actors and their roles in shaping the pilot.

Stakeholder group	Sub-group	Roles and responsibilities
<b>Public sector</b> 	<b>Local councils</b>	Issue traffic management orders, adapt parking permits and designate curbside bays for anchor points. Lead consultations with residents and businesses to balance innovation with local concerns. To resource this work, councils drew on a mix of Transport for London funding, grant programmes, and internal revenue to cover staff time for design and monitoring.
<b>Private sector</b> 	<b>City/transport authorities</b>	Provide funding and policy oversight to align pilots with citywide transport and climate strategies.
	<b>Logistics platforms</b>	Design the delivery model, integrate it into sustainability strategies and coordinate with authorities.
	<b>Delivery service partners (DSPs)</b>	Manage daily operations, employ porters, and provide feedback on anchor point siting and scheduling.
<b>Communities and residents</b> 	<b>Residents and businesses</b>	Participate in statutory consultations and informal engagement. Their acceptance or opposition shapes permit extensions, relocations, or removals.



# Impact

The pilot in central London has produced early, measurable results. Initial data point to reduced van trips and estimated emissions savings, alongside some operational changes.

## Environmental

**5,500 van trips avoided**

in central London since the start of the pilot

**70%** of London's Congestion Charge Zone covered by zero-emission vans, e-cargo bikes, or walking porters

**1 million+**

parcels delivered on foot since 2024

## Economic and operational

**1 stationary van model**

reduces parking search time and congestion costs

**10+** local authorities and private landowners expressed interest in replication

Source: Amazon (2025)<sup>46</sup>



# Takeaways

The OZD pilot offers clear lessons for cities and companies that want to scale pedestrian deliveries. Key considerations include regulatory alignment, suitable siting of anchor points, and the operational conditions needed to make hub-and-walk models work.



## Regulatory patchwork

Each London borough uses different permitting tools – an ETMO in Hackney, exemptions in Westminster and a Universal Business Parking Permit in Islington. While effective locally, this lack of consistency complicates replication and slows expansion.

**Takeaway:** Harmonized yet flexible permit frameworks could enable rapid expansion. Consistent models like the Universal Business Parking Permit give operators a clear path to scale walking logistics across jurisdictions.



## Anchor point siting

Trials demonstrate the sensitivity of these locations: one anchor point was relocated due to noise complaints, and another was removed entirely because of persistent opposition.

**Takeaway:** Pre-site reviews covering noise, visibility and resident impact reduce risk. Relocation clauses in permits allow councils to respond effectively to public concerns.



## Operations

The pilot shows that hub-and-walk models only outperform vans in very specific conditions: short walking loops, tightly clustered parcels and predictable reloading windows. Without these, costs rise and reliability drops.

**Takeaway:** Policy-makers can help by identifying high-density zones and granting curbside access for anchor points

in those areas, while digital tools that optimize porter capacity and reload timing keep operations reliable and cost-effective. Feedback loops with delivery service partners (who employ and manage walking porters) also proved important in refining anchor point distances and allocation patterns, balancing efficiency with workforce considerations.

# Conclusion

Pedestrian delivery is being tested in several cities as a response to congestion, emissions and limited curb space. Its effectiveness depends on regulatory flexibility, operational design and community acceptance.

The Walker On-Zone Dispatch pilot in London provides one example of how such models can function in dense urban areas. The trial showed that stationary vans supporting walking porters could be integrated into existing regulatory frameworks and local contexts, but also highlighted challenges around permitting, site selection and workforce arrangements.

Looking ahead, the key questions concern how bespoke pilot agreements might be standardized, and how porter-based delivery roles remain viable and valued.

## Contributors

Promising practice developed with input from Amazon.





PROMISING PRACTICE

## Smart Infrastructure for Fleet Electrification: Overcoming Grid Constraints in Norway with Posten Bring and Hitachi ZeroCarbon

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Prepared by the World Economic Forum's Centre for Urban Transformation in partnership with Posten Bring and Hitachi ZeroCarbon, this promising practice shows how Norway's largest logistics operator scaled electric fleets without major grid upgrades, providing practical lessons for policy-makers and industry on overcoming infrastructure barriers to zero-emission urban freight.



# Solution area: Electrifying deliveries through smart infrastructure

Cities worldwide are pushing for freight electrification and companies are pledging targets to follow suit.<sup>47</sup> Urban freight already accounts for around 25% of transport-related CO<sub>2</sub> emissions,<sup>48</sup> and electrifying delivery vans and trucks could cut these emissions by more than 70% while halving local air pollution. The imperative is clear, but the reality is complex.

The challenge lies less in vehicles than in the supporting infrastructure. Unlike diesel fleets, electric vans and trucks rely on grid-intensive charging systems,<sup>49</sup> where capacity is often limited, hardware ecosystems are fragmented and cold climates strain batteries.<sup>50</sup> Conventional wisdom suggests costly grid

reinforcements are unavoidable if fleets are to scale, but some companies are exploring alternatives.<sup>51</sup>

This promising practice shows how Posten Bring, Norway's postal and logistics operator, partnered with Hitachi ZeroCarbon to bypass that barrier.<sup>52</sup> By treating depots as intelligent energy ecosystems – integrating smart load management, tariff optimization and real-time monitoring – the company electrified its largest sites without major grid upgrades, demonstrating that systemic design can deliver reliable, large-scale freight decarbonization.



## Promising practice: Posten Bring and Hitachi ZeroCarbon in Norway

### Snapshot

Posten Bring, Norway's national postal and logistics provider, operates across challenging terrain, harsh winters and high urban delivery demand. Committed to net-zero road emissions by 2040,<sup>53</sup> the company faces systemic hurdles in electrifying a diverse fleet, especially in northern regions and grid-constrained cities.

In partnership with Hitachi ZeroCarbon, Posten Bring electrified two of its largest depots – Logistiksenter Oslo

(LSO) and Østlandsterminalen (OT) – in a pilot now scaled system-wide. By combining smart charging, tariff optimization, real-time vehicle monitoring, hardware-agnostic systems and cold-climate operational strategies, the company expanded charging capacity, enabled two-shift electric truck operations and began piloting shared use with third-party carriers – without requiring major grid upgrades.<sup>54</sup>

### Objectives

The initiative supports the following broader goals:



#### Environment:

- Transition all vans and 80% of trucks to fossil-free operation by 2030
- Achieve net-zero road transport emissions by 2040 and be net zero across the group by 2050<sup>55</sup>



#### Regulatory compliance:

- Prepare for Oslo's Zero Emission Freight (ZEF) Ring 2, requiring clean delivery vehicles in expanded city zones from 2027
- Align with Norway's Climate Action Plan mandating fossil-free heavy-duty vehicle sales from 2030

### Implementation

The execution of Posten Bring's electrification strategy comes from treating its depots as intelligent energy ecosystems rather than simple parking facilities. This can be understood through five integrated components, each designed to work in concert with the others.

## Transitioning the fleet and installing chargers

By 2024, Posten Bring's electric fleet included 1,577 vans and 139 electric or biogas trucks. Rather than a uniform rollout, the company adapts its strategy to each operational context:

- At Logistiksenter Oslo (LSO), a high-density urban depot, 161 electric vehicles handle last-mile distribution under fast turnaround conditions.
- At Østlandsterminalen (OT), the fleet includes 26 electric heavy goods vehicles (eHGVs) operating longer intercity routes on tighter energy margins.

To charge the fleets, Posten Bring uses mixed technology: slower Alternating Current (AC) charging for overnight and between-shift periods, and faster Direct Current (DC) charging for rapid turnaround during peak operations. During the pilot phases, at LSO, over 160 charging points supported 161 vehicles with slight overcapacity for operational flexibility. At OT, 26 heavy trucks relied entirely on high-power Direct Current (DC) fast charging.<sup>56</sup>

## Smart load management

The core innovation is intelligent software that manages energy distribution across all charging points.<sup>57</sup> Instead of first-come, first-served charging that can strain the grid, the system uses dynamic allocation based on vehicle battery levels, departure times, route requirements and grid constraints. Posten Bring installed ZeroCarbon Charge, a smart energy management system developed by Hitachi ZeroCarbon, which supports the following functions:

### Dynamic load balancing

Distributes energy across chargers based on SOC, departure times, route needs and grid limits.

### Tariff optimization

Shifts charging to off-peak hours, reducing energy costs (up to 10%).

### Solar integration

Prioritizes charging during peak renewable generation.

## Interoperability across vehicle and charging systems

Smart software alone is not enough when the hardware ecosystem is fragmented. Posten Bring's fleet includes vehicles from Volvo, Mercedes and Scania, and chargers from multiple manufacturers such as Kempower and Star Charge. In theory, standards like OCPP (Open Charge Point Protocol) should ensure compatibility, but in practice, they do not. To address this, Hitachi ZeroCarbon:

### Vehicle-charger compatibility testing

Validates performance across brands at LSO and OT.

### Hardware-agnostic back-end

Developed hardware-agnostic backend systems to support legacy and new equipment.

### Shared infrastructure

Opens depots to third-party carriers to scale decarbonisation.

## Real-time operational monitoring

With thousands of vehicle trips per day, Posten Bring needed visibility. Fleet Telematics (e.g. GPS, energy data) at both LSO and OT monitors Vehicle State of Charge (SOC), charger status and usage and route-level energy performance. These controls underpin Posten Bring's ability to run two daily shifts with electric HGVs, an uncommon outcome given Norway's cold climate conditions.

### Fault detection and reprioritization

Quickly addresses failures to maintain service.

### Performance benchmarking

Seasonal data informs improvements to charging and routes.

### Telematics visibility

Tracks SOC, charger status and route-level energy use.

## Ensuring operational continuity in cold climates

Even with the grid and hardware under control, Norway's winters required adaptation of Posten Bring's operations using real-time monitoring and software logic to maintain reliability in cold weather.

### SOC-based charging priority

Ensures low-charge vehicles are topped up first.

### Battery pre-conditioning

Heats batteries and cabins while plugged in to preserve range.

### Live route adjustment

Identifies underperforming vehicles and adjusts plans dynamically.



## Scaling infrastructure and expanding impact

Posten Bring is applying lessons from LSO and OT across its wider network. By 2025, the company will deploy 2,700 overnight chargers and 220 DC fast-charging points for heavy vehicles. Infrastructure is open to external carriers and rollout is supported by Enova, Norway's green innovation agency.

## Financing



Posten Bring's depot investments were enabled in part by public co-funding.<sup>58</sup> By securing support from Enova's heavy-duty charging programme, the company accelerated conversion of its largest terminals while reducing the upfront cost burden.<sup>59</sup>

## Timeline

Year	Milestones
2022	– Pilot phase launched at Logistikkcenter Oslo (LSO) with 161 electric vehicles and 160+ chargers; testing interoperability, smart charging and operational integration.
2023	– Grid optimization and charging platform deployed; secured Enova funding for scale-up; began preparations at Østlandsterminalen (OT) for heavy-duty fleet electrification.
2024	– Full deployment across LSO and OT; total fleet reaches 1,700+ electric vehicles; integration of solar, telematics and smart scheduling for winter operations.
2025 (Target)	– Federal CMAQ funding secured, enabling expansion to 1,114 locations with enhanced technical assistance. <sup>60</sup> 2,700 overnight chargers and 220 heavy-duty charging points operational; infrastructure opened to third-party carriers; insights shared with policy-makers to shape national standards.

## Stakeholders involved

The electrification effort brings together actors from the public and private sectors. Government agencies provide funding and regulatory frameworks, while Posten Bring leads the operational transition. Technology providers and vehicle manufacturers supply the tools and equipment needed to make the system work.<sup>61</sup>

Stakeholder group	Sub-group	Actor	Roles and responsibilities
<b>Public sector</b> 	<b>National authority</b>	<b>National funding body</b>	Provides grants for depot electrification, covering a share of capital costs per site
	<b>Local authority</b>	<b>Municipal agency</b>	Sets and enforces zero-emission freight regulations; integrates depot learnings into climate and mobility planning
<b>Private sector</b> 	<b>Lead logistics operator</b>	<b>Logistics company</b>	Develops and manages depot electrification strategy; procures vehicles and chargers; oversees fleet operations and data sharing
	<b>Technology provider</b>	<b>Charging platform firm</b>	Supplies smart charging solutions (load management, tariff optimisation, state-of-charge tracking); ensures system integration and performance
	<b>OEMs and suppliers</b>	<b>Vehicle and charger manufacturers</b>	Deliver electric trucks/vans and charging equipment; support interoperability testing and deployment

# Impact

Posten Bring's electrification programme has resulted in estimated environmental, operational and economic outcomes. The following outcomes illustrate the quantifiable benefits and evolving systemic impact of the initiative.

## Economic and operational

### Enabled two-shift operations

with electric trucks – matching diesel productivity

### Doubled charging capacity

without doubling the grid

### Full interoperability

across multiple vehicle and charger manufacturers

### Maintained service levels

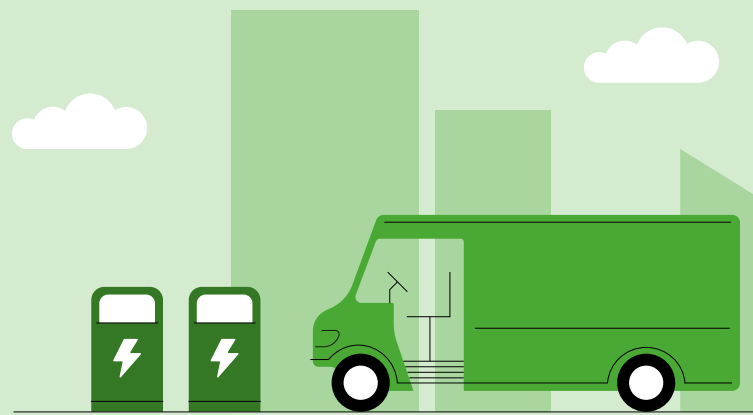
**10%** savings against flat-rate EV-charging baseline thanks to tariff optimization

## Environmental

### 630+ tonnes CO<sub>2</sub> avoided

annually at two Oslo depots

**50%** of Norwegians now receive deliveries by electric vehicle



Sources: Posten Bring & Hitachi ZeroCarbon (2025)<sup>62</sup>



# Takeaways

Posten Bring's experience highlights lessons that go beyond its own operations. Interoperability, financing, shared use of infrastructure and energy optimization each play a critical role in making electrification viable. The points below capture what other cities, operators and policy-makers can draw from this case.



## Platform-agnostic system

Posten Bring's depots include a mix of vehicle and charger types, each with differing software interpretations despite using the same communication standards. This presents a real challenge as ensuring interoperability requires real-world testing and a flexible backend capable of adapting to legacy systems. Its platform-agnostic system enables it to surmount these challenges.

**Takeaway:** When planning depot systems, it may be useful to test hardware and software combinations early, and to design for flexibility so legacy and new technologies can coexist.



## Public funding

Capital costs for charging infrastructure remain a major barrier, especially in retrofit scenarios. Enova's grant programme, covering up to 80% of infrastructure CAPEX, enables Posten Bring to invest in smart systems without overexposing itself to financial risk.

**Takeaway:** Public support that covers infrastructure costs can unlock investment in smarter, longer-term solutions. Exploring available grants or co-financing schemes could make projects more viable.



## Shared infrastructure

By opening depot chargers to third-party logistics operators, Posten Bring increases infrastructure utilisation and extends zero-emission operations beyond its own fleet. However, challenges existed as models require operational safeguards and strong stakeholder coordination.

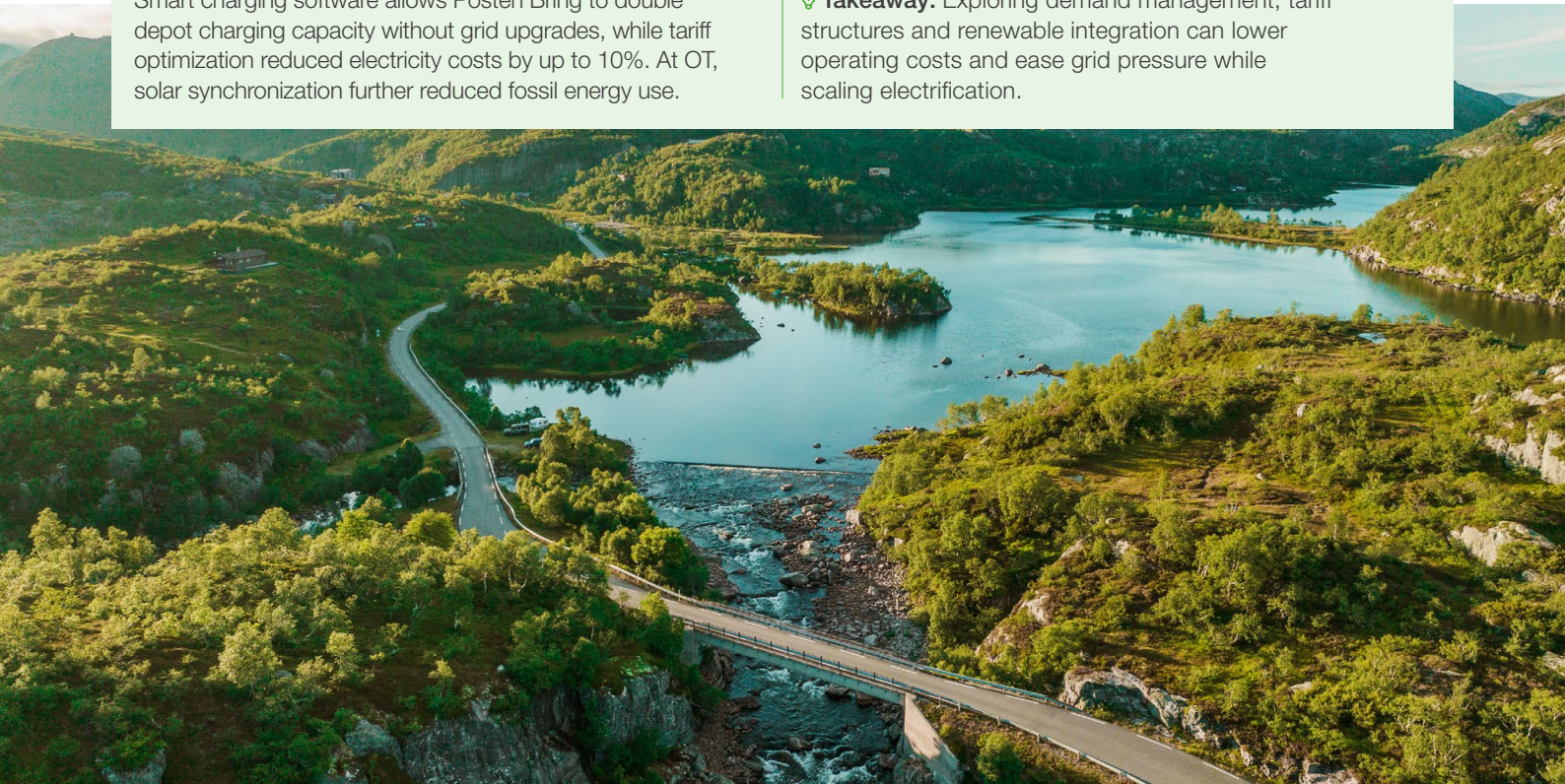
**Takeaway:** Shared models may expand zero-emission coverage and improve utilization rates. Building trust through clear agreements on access, data and costs can make them workable in practice.



## Energy optimization

Smart charging software allows Posten Bring to double depot charging capacity without grid upgrades, while tariff optimization reduced electricity costs by up to 10%. At OT, solar synchronization further reduced fossil energy use.

**Takeaway:** Exploring demand management, tariff structures and renewable integration can lower operating costs and ease grid pressure while scaling electrification.



# Conclusion

Electrifying freight in grid-constrained and high-cost contexts remains a challenge for many operators and municipalities. Limited grid capacity, fragmented charging ecosystems and harsh operating conditions often slow progress, yet practical examples are beginning to show how these barriers can be addressed.

The Posten Bring–Hitachi ZeroCarbon initiative demonstrates one such approach. By treating depots as integrated energy systems, the project was able to expand charging capacity and maintain operations within existing grid limits. Public funding support, infrastructure design choices and shared use of assets each contributed to the outcome, suggesting that a combination of regulatory, financial and technical measures is often needed to scale zero-emission operations.

While not a universal model, the experience provides a reference point for cities and logistics operators considering how to manage electrification under constrained conditions, and highlights the role of coordinated action across sectors.

## Contributors

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PROMISING PRACTICE

## Scaling Micromobility for Urban Deliveries: The iFood Pedal Programme in Brazil

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Prepared by the World Economic Forum's Centre for Urban Transformation in partnership with iFood, this case reviews the iFood Pedal programme, which supplies couriers with bicycles and e-bikes as part of efforts to scale micromobility in urban delivery.



## Solution area: Micromobility for urban deliveries

E-commerce and delivery services in Brazil have grown at breakneck speed, pushing last-mile logistics to record highs. The market is set to hit \$346 billion in 2024 and grow nearly 20% a year through 2027.<sup>63</sup> To keep up with demand for ultra-fast deliveries, many couriers use motorcycles. For riders, that means high costs and daily safety risks.<sup>64</sup> For cities, it means more congestion, air pollution and noise.

Cities worldwide are testing alternatives to tackle these challenges, often by promoting micromobility – especially e-bikes, which produce no tailpipe emissions, use less road space than cars or motorcycles, and move more easily through congested streets. However, high upfront costs put e-bikes

out of reach for many workers. Some government jurisdictions have tried to bridge this gap: California has offered purchase incentives,<sup>65</sup> and many European countries recently introduced subsidies for residents and workers to reduce emissions and traffic congestion.<sup>66</sup> Still, most of these efforts focus on private ownership rather than the needs of professional couriers.

This promising practice examines the iFood Pedal programme, which offers subscription-based bicycles and e-bikes dedicated exclusively to delivery workers. The case provides early lessons in the opportunities and constraints of scaling courier-focused micromobility.



## Promising practice: iFood Pedal programme

### Snapshot

In Brazil, motorbike use is standard for couriers, but comes with high accident rates, long hours in traffic, and fuel and maintenance costs that often exceed daily earnings.<sup>67</sup> To address this, iFood – Brazil's largest delivery platform – launched its Pedal Programme with Tembici in 2020, and with Bliv in 2025.<sup>68</sup> Now in 11 major cities, the initiative provides couriers with subscription-based access to bicycles and pedal-assist e-bikes, backed by dedicated docking stations, maintenance support, training and integration through the iFood app.<sup>69</sup>

By shifting couriers from motorcycles to bikes, the programme aims to increase driver safety while also reducing gig workers' financial strain and accelerating zero-emission deliveries. Early data suggest high volumes of zero-emission deliveries each month.<sup>70</sup> However, key questions remain around affordability, infrastructure and equity, which determine the suitability of the model at scale.

# Implementation

The iFood Pedal programme runs on four pillars that enable micromobility at scale: app-based access, dedicated worker infrastructure, regulatory integration, and a financing and delivery model tested at scale.

## Access model

### App sign-up

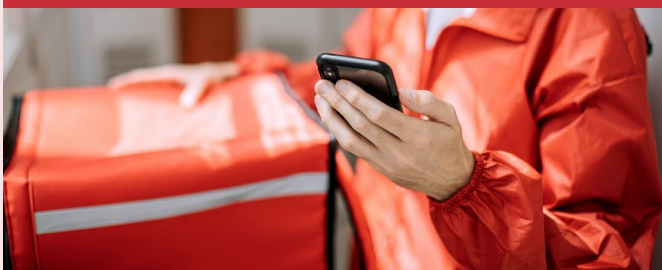
Couriers register through the iFood app and select either a mechanical or pedal-assist e-bikes.

### Pricing and subscription

Pricing capped at 20-25% of drivers' gross earnings. Regular bikes cost R\$32/week with daily return required, while e-bikes cost R\$95/week but allow full-week access for both delivery work and personal use.

### Routing

App provides couriers' routes mapped to the docking network, with shorter trips and higher delivery density.



## Worker infrastructure

### Docking network

Stations across 11 cities keep bikes available and serviced.

### Maintenance bases

Dedicated hubs provide regular upkeep for e-bikes.



## Regulation

### Speed limits

E-bikes are capped at 25 km/h under Brazil's National Traffic Council standards, meaning riders do not need a registration or license, and can make use of dedicated bike lanes.

### Permitting

Municipal governments authorize docking stations, embedding them in local planning.



## Financing and delivery model

### Shared roles

iFood integrates the service, Tembici and Bliv manage fleets, governments provide permits, and civil society partners support training.

### Scaling finance

Tembici raised R\$160 million from the Brazilian Development Bank (BNDES), backed by the National Climate Fund and other credit lines.<sup>71</sup>




### Cost recovery

Climate finance flows to operators, while day-to-day costs are covered by courier subscriptions and iFood's reduced in-app tariffs.



## Stakeholders involved

The iFood Pedal programme involves multiple stakeholders across digital platforms, operators, governments and worker groups.<sup>72</sup>

Category	Type of stakeholder	Role
<b>Public sector</b> 	<b>Food delivery platform</b>	Anchors the programme by subsidizing bike access, integrating subscription options into its app and recruiting couriers
<b>Private sector</b> 	<b>Micromobility providers</b>	Supply and maintain fleets of bicycles and e-bikes; operate docking stations and manage technical back-end systems
	<b>Municipal governments</b>	Provide permits for docking stations, enable use of public space, and align operations with local mobility and climate policies
	<b>Training and advocacy organizations</b>	Deliver road safety and cycling skills programmes; advocate for courier well-being and fair access
<b>Civil society</b> 	<b>Courier associations and informal groups</b>	Provide feedback on affordability, safety and working conditions; highlight challenges and shape programme design



## Impact

The iFood Pedal programme is showing early estimated outcomes, particularly environmental, through reductions in motorcycle use.

**800 tonnes**

of CO<sub>2</sub> prevented in 2025 compared to motorcycle-based delivery

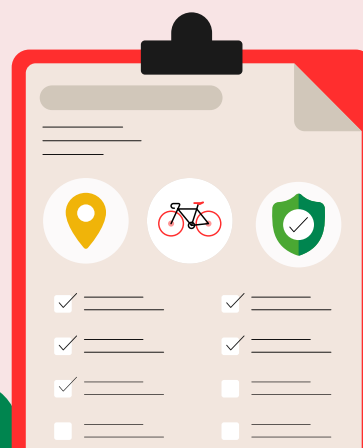
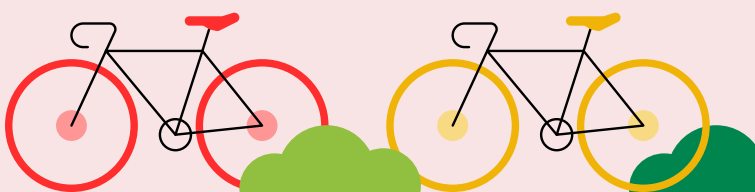
**Fewer motorcycle trips**

associated with lower levels of noise and air pollution in 11 cities

**750,000**

zero-emission deliveries per month

Source: iFood (2025)<sup>73</sup>



# Takeaways

The programme remains an evolving model and its rollout offers lessons on how platforms and cities might approach scaling micromobility in ways that address sustainability and worker needs.<sup>74</sup>



## Managing demand pressures

In several cities, demand for e-bikes has outpaced supply, leading to longer wait times for riders. Expansion has also been slowed in some locations by delays in securing permits for docking stations. If growth does not keep pace with demand, couriers may face frustrating waits for available bikes and the programme could risk losing momentum.

**Takeaway:** Delivery fleets are most effective when supply expands in step with demand. Platforms and cities can help ease pressures by combining reservation tools and real-time monitoring with municipal support for curbside docking space. Ensuring an adequate number of bikes, particularly during peak periods, will be key to sustaining courier trust and programme credibility.



## Affordability and viability

For many couriers, bike rentals are cheaper than motorbikes, but still represent an extra cost. Flexible plans have helped uptake, but long-term success hinges on balancing what riders can afford with what platforms can sustain.

**Takeaway:** Affordability for workers and economic viability for operators work best in tandem. Flexible subscriptions broaden access, public co-investment lowers costs and well-being features work best when treated as essentials, not add-ons.



## Equity in route allocation

The programme has successfully created a more reliable system for riders using iFood's subscription bikes, as this allows the company to concentrate on infrastructure management within a defined area. At the same time, this approach has highlighted an important trade-off: riders using their own bikes may receive fewer orders or less ideal routes, which can affect their earnings potential. The programme underscores the challenge of designing allocation systems that both optimize operational efficiency and ensure equitable opportunities for all riders.

**Takeaway:** Combine allocation models so that efficiency gains from subscription fleets do not come at the expense of independent riders. This can include reserving a share of orders for non-programme riders, or rotating access to high-density routes to maintain fairness.



## Infrastructure gaps

In Brazil cities often lack dedicated e-bike infrastructure, such as safe lanes and curbside space for docking that can expand with demand.

**Takeaway:** Municipal infrastructure sets the ceiling for how far bike-based delivery can scale. Cities can support growth by aligning cycle lane expansion, curbside allocation and licensing with delivery demand, while platforms that co-plan infrastructure needs with municipalities reduce rollout risks.



# Conclusion

Micromobility is increasingly being tested as an option for last-mile deliveries in cities facing congestion, air pollution and rising safety concerns for couriers. The effectiveness of such schemes depends not only on providing vehicles, but also on ensuring that financing, infrastructure and access arrangements are in place.

The iFood Pedal programme offers one example of how courier-focused micromobility can operate at scale. By shifting some riders from motorcycles to bicycles and e-bikes, it has aimed to reduce costs and risks for workers while contributing to lower-emission deliveries. At the same time, the programme has underscored key dependencies: the need for municipal investment in safe cycling infrastructure, the challenge of keeping subscription models affordable for lower-income riders, and the importance of maintaining fair access for both participating and independent couriers.

As the programme expands, ensuring consistent maintenance and safety of the fleet has become more complex. This highlights that scaling bike-based delivery requires parallel investment in upkeep, quality assurance and supporting infrastructure, alongside financial and regulatory measures. Taken together, these lessons may inform how cities and platforms approach the broader task of embedding micromobility into urban logistics.

## Contributors

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# Endnotes

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