

How can the 'last mile' participate in decarbonization?

The **last mile** in urban logistics refers to the very last part of the delivery process of a product, i.e. the transport section from the last distribution centre to the end customer.

The environmental impact: In 2018, a total of 24% global CO₂ emissions from fuel combustion came from transportation, with road transportation accounting for three-quarters of this share (Planet Energy, 2020). By making changes in the way last mile deliveries are made, there is the opportunity for significant improvement in reducing GHG emissions in the transportation industry.



Challenges and the Current Context

Why are the 'last mile' social and environmental costs so high, and what does this mean?

- 36% increase in delivery vehicles in city centres by 2030 due to a huge **rise in e-shopping consumption habits** (CNBC, 2020).
- Leads to 32% rise in CO₂ emissions + 21% rise in traffic congestion (CNBC, 2020).
- In a city, about 30% of transport emissions can be attributed to the freight sector. This includes delivery vehicles, waste collection, and transport of building materials (LMAD, 2021).
- This **issue has been amplified by the pandemic**, with consumers relying more than ever on online and delivery services; online shopping in the UK has increased by nearly 20% (WEF, 2021).

The cost of the last mile

In addition to being a key to customer satisfaction, last mile delivery is both the most expensive and time-consuming part of the shipping process. One of businesses' biggest expenses and challenges is same-day, final mile delivery.

Depending on the calculation, the costs for the **"last mile" account for between 28% and 58% of the total transport costs** (Arti, 2021).

The 'Last Mile' Delivery

Modes of transport

- Bikes
- Mopeds
- Scooters
- Cars
- Vans
- Trucks



Business models

- Same company (=self-run delivery)
- Outsourcing (=third party delivery)
- Mixed delivery
- Legacy providers (ie: DHL, FedEx, UPS)
- Crowdsourced delivery (i.e. UberEats, DoorDash)



Drop-off

- Home
- Public and private parcel lockers (advantage: delivery at any time day or night)
- Collection or service points

Challenges & Results

- Low NPS (net promoter scores) on last mile delivery: need for improvement with partnerships and greener delivery options (Bearing Point, 2021)
- Inefficient process
 - delay, high traffic congestion, limited parking space, or incomprehensible addressing (urban)
 - long distances (rural)
- Direct conflict with infrastructure policies
- Safety of delivery staff
- Failed deliveries

Need for... innovative ideas

- Cargo bicycles
- Use of excess space in public transport (i.e. metro)
- Double-parking enforcement
- Mandated nighttime deliveries (WEF)
 - reducing congestion by 15% and cutting delivery costs by 28%



... & technological advances!

Social impacts

- Criticized working conditions of parcel delivery staff (i.e. high time pressure, representing the entire value chain)
- Noise and air pollution
- Rise in congestion (+ 11 min commute)
- Risk of accidents
- Delivery trucks disrupting public transit

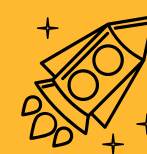


Environmental impacts

- Increase in carbon emissions due to rise in traffic and congestion
- Air quality degradation
- Soil & water pollution
- Change in eco-urban landscape

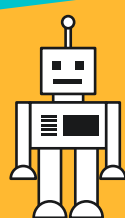


Looking Forward...



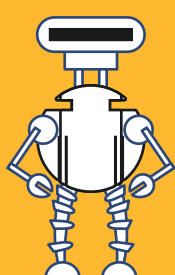
Automation

A Lux Research report predicts that automated delivery will make up to \$48 Billion in revenue by 2030. They identify four automated delivery methods: **drones, legged robots, wheeled robots and autonomous vehicles**. This could lead to 20% of deliveries being automated by 2030 (Lux Research, 2021).



Technological and Digital Solutions

- Apps and Platforms: i.e. smart routing, curb reservation, and parking
 - Technology to track delivery progress or traffic to optimize routes and avoid unnecessary drop-offs
 - Public and private data collaborations
 - Cargo bikes and AV
 - 'Last mile' logistics hubs and urban fulfillment centres



Rethinking the Last Mile delivery

- Before implementing any of the aforementioned solutions, what is most needed are **significant** and **efficient improvements** of the last mile delivery.
- **Factors** that should be looked at are a reduction in the **numbers of empty trips, packaging materials**, and the **combination of packages** that are same-day delivery.
- Looking into the "Tina Cube" developed by Proctor & Gamble to **optimize size and weight** when loading trucks (Barbarino, 2013)
- However, we know that economic growth is behind material prosperity; it is what enables us to live affluently in traditionally wealthier countries (those that consume a large share of planetary resources).
- At the same time, we know that economic growth requires using the planet's resources; that their quantity and quality is declining over time; and that resource use is dangerously interfering with planetary sinks and regulations.

In short, **we cannot decarbonize without some level of degrowth**

