CO₂ emissions from freight

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• Warehouses, innovations, new trends, policies on freight and city logistics
• New sources for freight data

Results available online:

• Observatory of e-commerce mobilities
• Survey data on instant delivery platforms in Paris
• Logistics real estate and relationships with urban form in 74 large cities around the world

Freight transportation and logistics’ carbon footprint

- Freight and logistics activities represent **8 to 10% of worldwide GHG emissions** (GLEC)
  - 80-85% from transportation
  - 15-20% from warehouses
- Increasing emissions from IT and data centers
- Digital is also part of the solution (data processing, optimisation)

Warehouses in Atlanta
Photo L. Dablanc
Freight is one third of CO$_2$ emissions from transportation and may represent half in 2050 (ITF/OECD)
Scope 1 or scope 3?

Carbon footprint of freight for city of Paris (2020)

- Scope 1 (emissions from local freight traffic): 1.2 Mt
- Scope 3 (emissions from all freight transport): 5 Mt (21% of all carbon footprint of Paris)
Location of logistics facilities’ impact on freight emissions

Without an urban hub: **151 tons CO₂/y**

With an urban hub: **74 tons CO₂/y**
E-commerce: less CO₂ emissions than physical retail

- Meta-analysis (Buldeo Rai, Touami, Dablanc, 2022)
- 244 carbon footprint studies (50% from Europe, 30% from the US, 20% from other countries)

Only 41% of these studies include full calculations (life-cycle analyses and Scope 3)
Only 17% of these studies include returns
Only 59% of these studies include packaging
GLEC: a unified method to assess freight and logistics emissions for companies

GLEC: Global Logistics Emissions Council
https://www.smartfreightcentre.org/en/

ISO 14083:2023

- International standard
- A common methodology for the quantification and reporting of GHG emissions from the operation of transport chains of passengers and freight
Intelligent mobility and optimization tools are part of the solution

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<tr>
<th>Reduce goods transport demand</th>
<th>Optimise transport modes</th>
<th>Increase optimal use of assets</th>
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<tbody>
<tr>
<td>Spatial disposition of warehouses and production sites to minimize distances</td>
<td>Use best modes according to situation (capacity, infrastructure availability)</td>
<td>Optimize loading factors of vehicles</td>
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<tr>
<td>Sourcing of materials and parts to minimize distances</td>
<td>Support transition to multi-modal</td>
<td>Choose best vehicles according to situation (capacity)</td>
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<td>Increase delivery lead times accepted by consumers</td>
<td>Integrate carbon cost in transport cost calculations</td>
<td>Consolidate transport resources to minimize empty runs</td>
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Selection from McKinnon Decarbonizing logistics 2018
Technologies to regulate, monitor truck traffic... also a way to collect better freight data

- Belgium and Brussels: truck charging since 2016
- Highest fee (33.9 c/km) for most polluting trucks
London Low Emission Zone

• All the metropolitan area regulated for trucks and large vans based on Euro standard
• Three Zero Emission Zones by 2025
• Automated plate reading cameras (ANPR cameras)
Electric trucks are promising but still too expensive

Amazon DAF electric trucks, 2022

Schenker France Volta Zero since 2022

Tesla Semi delivered to Pepsi since December 2022
Zero emission logistics can also mean poor working conditions.

New York City (Dablanc, Schorung March 2022)