Challenges to a seamless urban freight transport policy

A CO$_2$ story to begin with

- Tonnes of equivalent CO$_2$ emissions: a favorite indicator used by policy-makers and corporations to report on environmental achievements
- An indicator that helps compare different operations and policies
- A way of presenting three quite different pieces of urban freight research
- Assessments made at different regional scales and different freight sectors in Paris
1. Experiments in last mile deliveries

- Media attention
- City’s support and financial help
- A central part of the Mayor of Paris’ freight strategy since 2001
  - Monoprix freight train
  - Chronopost Concorde electric deliveries
  - La Petite Reine electrically assisted tricycles
  - Colizen electric deliveries
  - Consignity locker boxes for repair parts
The Monoprix freight train

- 90 Monoprix supermarkets supplied by rail since 2007
- Trains arrive in a renovated freight terminal close to the center of Paris
- CNG trucks for the final distribution

Photo Samada

French Institute of science and technology for transport, development and networks
Results
(2009 study made by Interface Transport)

- City paid €11,000,000 for the terminal and Monoprix €700,000 for equipment and other works
- The scheme generated a saving of 410 tonnes of CO₂ per year
- And an increase by 26% in transportation costs per pallet (14% today)
The Chronopost Concorde electric deliveries

- A subsidiary of La Poste, 18% of parcel distribution market in France
- Since 2005, use of electric delivery vehicles to deliver central arrondissements of Paris
- And an urban logistics space of about 1000 sq meters underground the Place de la Concorde in a municipal car park

- A daily shuttle between the suburban hub and the underground facility
- Local deliveries made by 12 small electric vans and two “Chronocity” (small containers on chassis hauled by hand with electric power assistance)
Results
(2009 study made by Grant Thornton)

- The company invested €500,000 in the renovation of the terminal (in an underground parking facility owned by the city)
- The city asked for a low rental price (€60 per sq meter per year): €200,000 in lost revenue
- **33 tonnes** of CO₂ (per year) saved
- Two thirds from the use of electric fleet, one third from consolidated routes
- Emissions of NOx decreased from 192 to 48 kg, and PM₁₀ from 12 to 3 kg

La Petite Reine

- A small express delivery company using electrically powered tricycles since 2002 – owned by Star’ Service today
- 45 tricycles serving central arrondissements from two urban terminals
- Sub-contractor for major companies (FedEx, DHL)
- Parcels received from different companies before the morning peak hour, consolidated by routes and destinations, distributed until 1:00pm
- LOVELO, the tricycle manufacturer, is a subsidiary of the company
Results
(study from ItemConsultants)

- Over a twelve month period:
  - avoided 600,000 tonnes-km from vans in Paris
  - avoided the emissions of **203 tonnes of CO₂** and 84 kilos of particles

RESULT #1

Innovative last mile delivery operations in the Paris city center avoid the emissions of **700 tonnes of CO₂** per year
2. The CO₂ impact of logistics sprawl

- The spatial deconcentration of logistics facilities in metropolitan areas overtime
- Caused by urban developments, cities' land use regulations, cost of land, needs for large parcels and modern facilities
- Generates considerable additional vehicle-miles and CO₂ emissions in urban areas

The location of cross-dock parcel companies’ terminals in the Paris region between 1974 and 2010

Dablanc and Andrianakaja, 2011
Cross-dock terminals in the Paris region between 1974 and 2010

- The average distance of cross-dock terminals to their barycenter increased by 10 km (from 6 to 16 km)
- The average distance of all jobs to their barycenter increased by 2 km
- Logistics activities sprawled faster than economic activities in general: it takes more truck-kilometers to reach urban destinations to and from terminals
Calculating net CO₂ emissions caused by logistics sprawl

• Using average truck-kilometers as well as CO₂ emission factors per type of vehicle for both years
• We calculated an addition of 16,350 net tonnes of CO₂ in 2010 compared with 1974

RESULT #2

Sprawling patterns of the parcel transport industry’s warehouses generate additional emissions of 16,000 tonnes of CO₂ for 2010 compared with 1974
3. Paris carbon footprint and freight transportation

- A 2005 study made by Groupe 2AG Ingénierie
- 6.55 million tonnes equivalent CO₂ in total
- **1.75 million tonnes** for freight transport

RESULT #3

- Total freight distribution activities in Paris generate the emissions of **1.75 Mt of CO₂** per year

1,750,000 t CO₂
16,000 t CO₂
700 t CO₂
• While contributing to some reduction of emissions through last mile delivery initiatives, the city of Paris ignored a more invisible patterns of freight terminals’ relocation and subsequent truck traffic.

• Urban freight policy-makers should be aware of global trends and should favor comprehensive policies over small-scale, media exposed projects.

• Comprehensive global policies can be challenging.

• But there are ways forward.

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**Metropolitan-wide planning for warehouses?**

• Zoning and permitting remain local/municipal.

• Diverging views among local governments.

• Three types of freight agendas:
  – Old industrial areas wanting to retain manufacturing/logistics jobs.
  – Residential cities or cities selecting only specific economic/industrial development (research, high tech).
  – Fast growing suburban communities eager to provide jobs.

• Healthy competition and part of regular growth process for metropolitan areas but it also leads to:
  – The choice of “second-best locations” or communities saying no to facilities despite a potential benefit for the region (St Mard in Paris).
  – Loss of tax revenues for poor communities because of tax competition.
  – Deteriorated operating conditions for the trucking industry.
Organizing logistics clusters in the Paris Region’s Master Plan

Accommodating logistics facilities in cities

- In Japanese cities, logistics terminals are part of the urban street
- Yamato facilities in very busy streets in Tokyo city center
- a ProLogis multi-story warehousing and cross-docking terminal located in a central neighborhood of Tokyo
- A Sogaris terminal 8 km south of Notre-Dame in Paris
Proposed “RALA” (Reserved Areas for Logistics Activities) in Mexico City
Metropolitan-wide low emission zones?

- Traffic and truck parking regulations are mostly local: in the Paris region, hundreds of different truck access regulations and delivery time windows
- Low emission zones introduce an environmental standard to truck access rules – many large cities in Europe have adopted environmental zones
- One LEZ is truly metropolitan in scale: London

The London Low Emission Zone (LEZ)

- All trucks and large vans
- Established within the M25 highway
- Trucks < Euro IV pay a very high fee
- Plate-reading and recognition system
- The share of Euro II, I and 0 trucks has fallen from 20 percent to near zero percent
- In 2008: 28 tonnes PM$_{10}$, 26 tonnes PM$_{2.5}$ and 529 tonnes Nox saved (Transport for London, 2010)
- Representing 3.6; 3.7 and 2 percent of metropolitan-wide traffic related emissions
Conclusion

• A metropolitan-wide seamless urban freight policy is a relevant objective because it contributes to a more efficient allocation of land resources to freight and logistics facilities, easier operating conditions for the freight industry, and actual results in terms of a better air quality
• Steps can be taken now
  – Relevant
  – Reasonable
  – Coordinated

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