

Sustainable city logistics

Dr. Laetitia Dablanc

- Research oriented Chair
- Warehouses, innovations, new trends in consumption and impacts on city logistics

<https://www.lvmt.fr/en/chaires/logistics-city/>

Results available online:

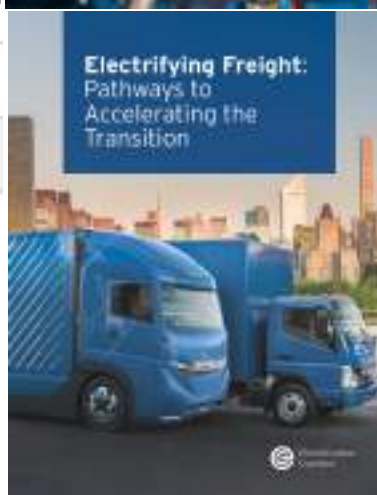
- Observatory of ecommerce mobilities
- Survey reports on gig workers for instant delivery platforms in Paris 2016, 2018, 2020, 2021
- Barometer of urban logistics under covid lockdown
- Logistics real estate and relationships with urban form in 74 large cities around the world



City logistics is a topic closely scrutinized

accenture

THE SUSTAINABLE LAST MILE.
FASTER. CHEAPER. GREENER.



Changes and innovations worldwide

- Consumer and societal demands increasing and converging
- Innovative supply of logistics services, converging processes: DHL, Ifood, Prologis... catering for all metropolitan areas
- Start-ups, urban freight tech everywhere, often with food tech



COVID pandemic impact on e-commerce

- France 2020: +32% B2C products sold (growth rate twice as high as usual)
- Traditional retail has changed into omni-channel commerce
- Visibility of last mile issues (politicians, media, anyone)
- Increased number of deliveries and use of curb

Beijin April 2020



Arte

Paris Dec 2021



H. Buldeo Rai

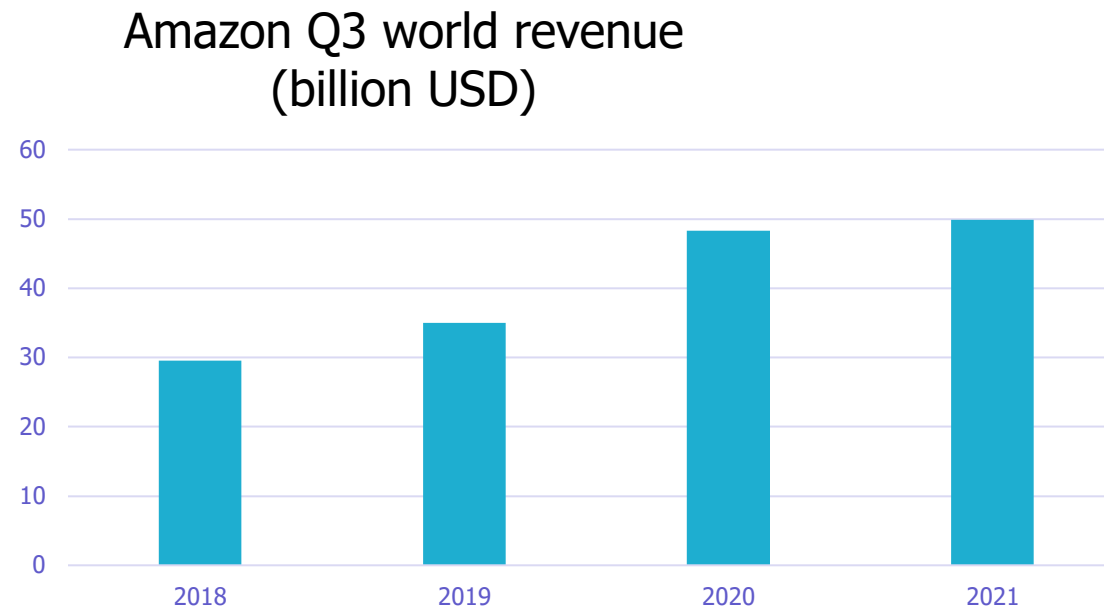
NYC Dec 2021



H. Coleman Halphen

Amazon growth has accelerated

- Revenue from \$35 (Q3 2019) to \$48 bn (Q3 2020) to \$49 bn (Q3 2021)
- 2020: nine warehouses added in New York City only



Data source: Amazon

New formats: quick-commerce for grocery

- Cajoo promises to deliver in 15 minutes
- Gorillas promises to deliver in 10 minutes
- Alibaba promises to deliver in 5 minutes

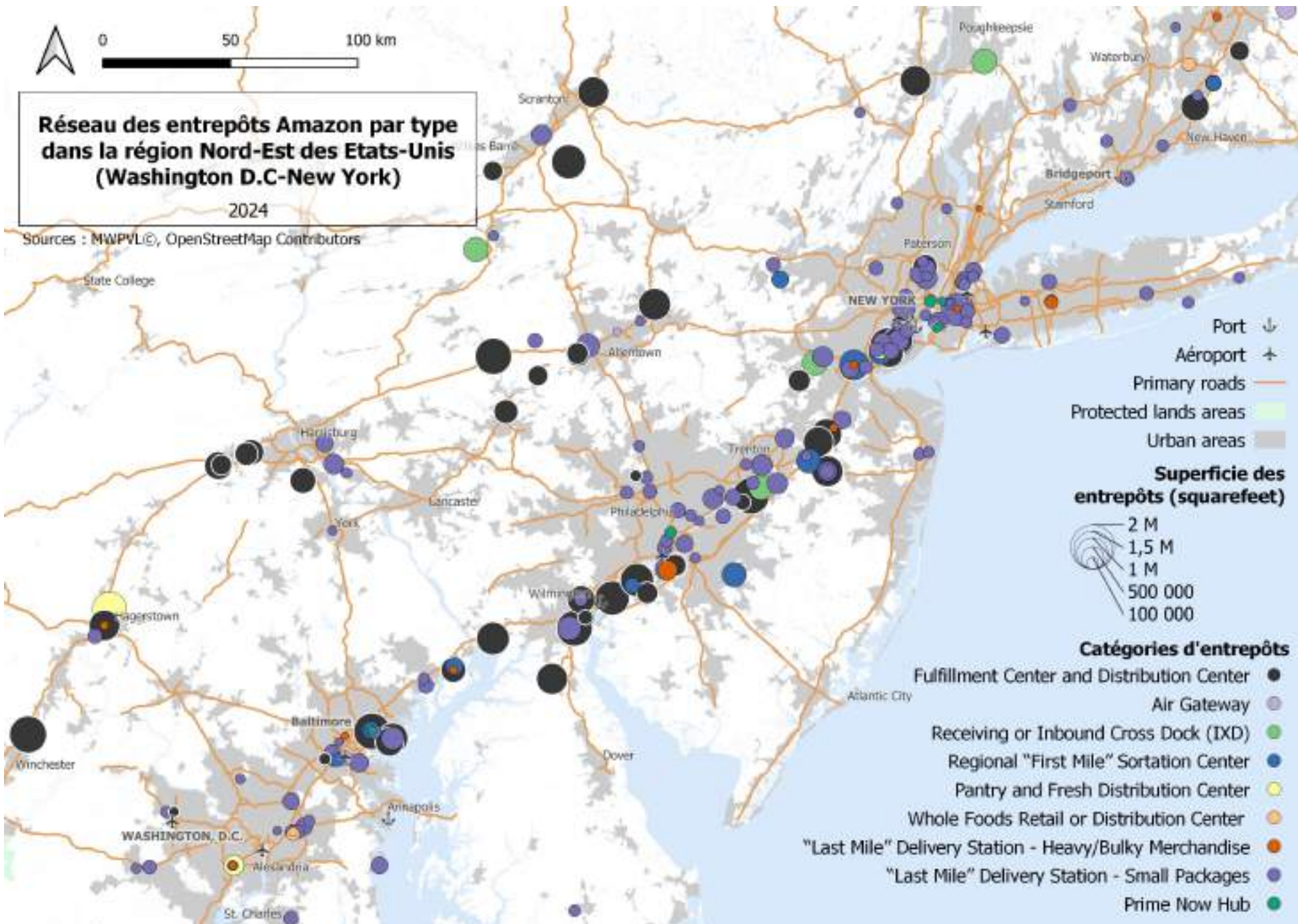


- "Dark stores": use of abandoned stores or underground parking facilities
- In China, with longer experience of q-commerce: 5% market share of all online grocery shopping

Alternative modes for urban deliveries

- Trucks and vans in French cities: 70% of last-mile drivers
- Cars, mopeds, cargo-bikes, bicycles, walking/transit: 30% of last-mile drivers already (much less in volume of deliveries)
- Amazon Flex in US cities
- Labor issues and labor legislation





Every day from a 20,000 m² last mile delivery station:

- 45 lorries
- 250 vans
- 795 private cars

(Jaller, 2019)

T. Lecourt,
Chaire Logistics
City, 2021

On-demand 'instant deliveries'

- Deliveries in two hours, smartphones and apps
- Gig workers, self contractors
- Labor laws, legal complexities

Buenos
Aires



Stockholm



Kigali



Moscou



Giant companies

- Meituan market valuation in May 2021: \$210 bn
- Postmates sold to Uber for \$2.65 bn
- UberEats (world) orders in 2020: +130%
- DoorDash IPO in December 2020
- Deliveroo IPO in March 2021



Autonomous deliveries emerging in specific markets



JD in China



Nuro in Texas



Starship in the UK



Flytrex in Iceland and the US

Innovation in urban warehouses

- A dynamic (niche) market
 - Innovative architecture on former industrial areas
 - Multi-levels (vertical warehouses, underground warehouses)
 - Temporary
 - Flexible
 - Mixed-use
- => Expensive and very regulated

New urban warehouses are based on goods flow consolidation ... and use of trucks

Tokyo



Brooklyn



Paris



Delivery services from underground municipal car parks

Under the Louvre, Paris



Under Plaza Mayor, Madrid (FM Logistic Ibérica)



News

CITYLogin opens micro-hub under Madrid's Plaza Mayor

CITYLogin and Madrid's Municipal Transport Company (EMT) have inaugurated a micro-fulfilment centre under Plaza Mayor, the Spanish capital's famous main square. The 200-sqm...

10 October 2019

Opera



Beaugrenelle



Concorde



An interactive map of available logistics micro-hubs in London

<https://crossriverpartnership.org/urban-logistics-hubs/>

Urban Logistics Hubs in London



Urban logistics hubs and micro logistics hubs play an important role in promoting sustainable and efficient freight activity in London. Their use allows goods to be rationalised and distributed via low and zero-emission vehicles for the 'last mile' of the supply chain. This **improves air quality, reduces delivery vehicle trips, and decreases traffic congestion on roads.**

Use the interactive map below to **explore potential sites that have been advertised by Local Authorities and Landowners for use as urban logistics hubs and micro logistics hubs** across central London.

Cross River Partnership (CRP) would like to recognise and thank the Central London Sub-Regional Transport Partnership (CLSRTP), and Transport for London as the funder for this online tool.



Urban logistics hub under Paris ring-road



Chapelle logistics hotel (45,000 sq m)

- Recycling of a former freight rail area
- Four levels
- Multi-use: logistics, offices, data center, sports, urban farm
- Rail infrastructure (unused yet)



Hôtel logistique de Chapelle international (18e arr.) inauguré en juin 2018. © JGP



'Neighborhood
uproar against the
future logistics
facility''
Le Parisien, Sept
2021



Paris region, freight share of transportation related emissions

	Total region	Paris	Dense suburbs	Far suburbs
CO ₂	19%	34%	18%	7%
PM10	30%	46%	28%	11%
NOx	29%	51%	26%	9%

(B2B only) (% of total transport emissions) Coulombel, Dablang, Koning, 2018

E-commerce mobilities: poorly quantified

- *New York Times* March 4, 2021 “Roughly 2.4 million packages are delivered in the city every day, nearly half a million more than before the pandemic, and city data shows that 80 percent of deliveries are to residential customers, compared with 40 percent before the outbreak”
= 0.23 parcel per day per person
- *Le Monde* January 21, 2021: “According to head of Colissimo, there were one billion B2C parcels delivered in France in 2020”
= 0.04 parcel per day per person (six times less)

E-commerce carbon assessment

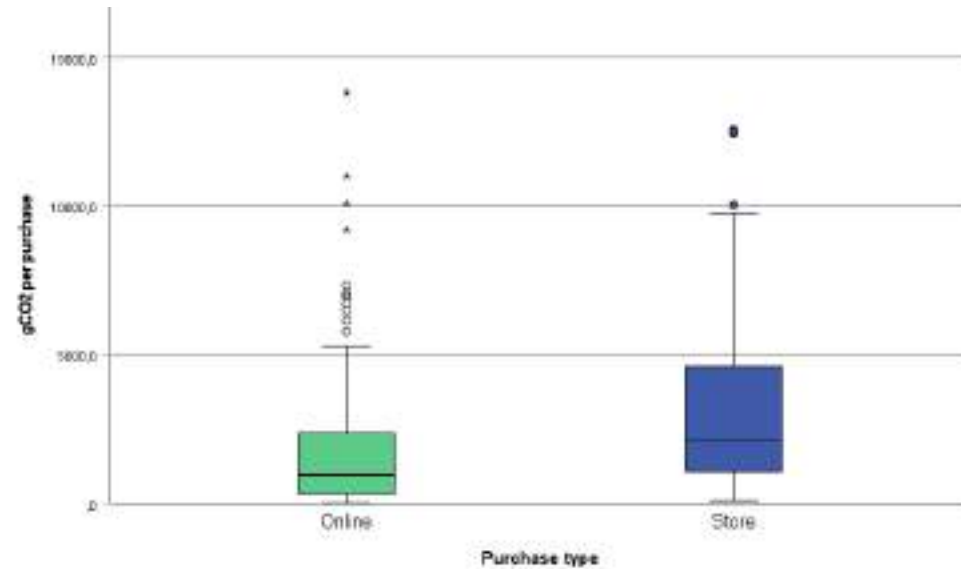
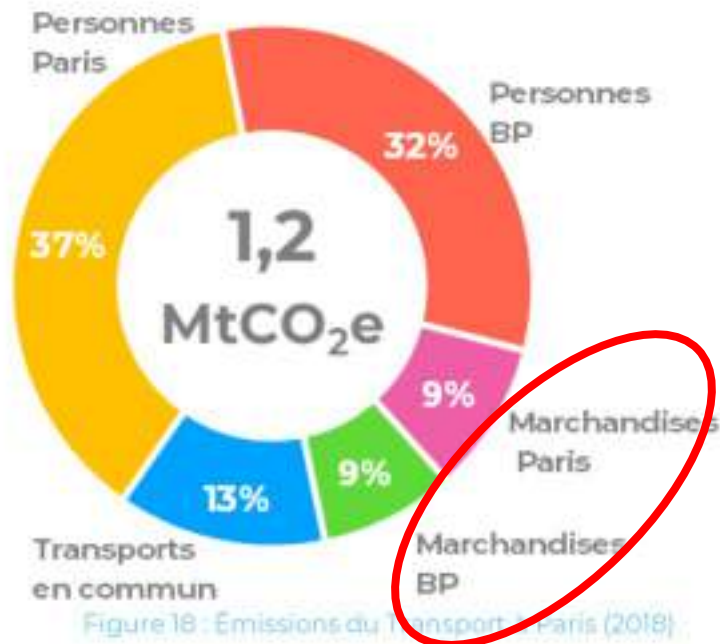


Figure 1. Carbon footprint of online and store purchases ($p < .001$).

- Meta-analysis of case studies around the world (Buldeo Rai, Touami, Dablanc, submitted 2022)

Carbon footprint of freight for city of Paris (2020, with 2018 data)



- **Global CO₂** emissions from freight in 2018 (including what is imported to be consumed by Parisians): **5 Mt** (21% of all carbon footprint of Paris)

- **Local CO₂** emissions from freight in 2018: **1.2 Mt**

Comparing 2004-2014

- CO₂ emissions from urban freight “decreased by 18% between 2004 and 2014”
- Vans underestimated
- Motorized two-wheelers not included

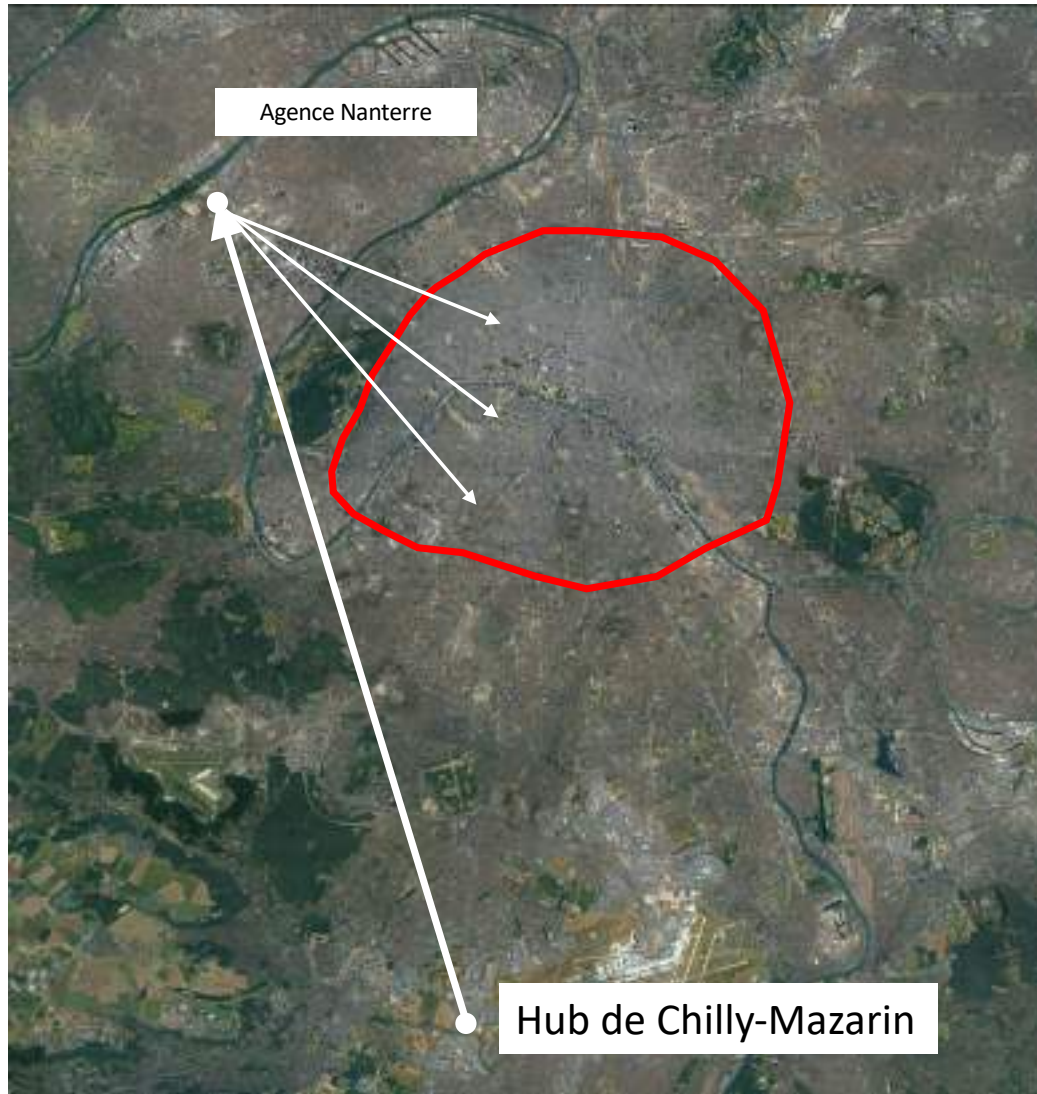


Solutions to decarbonize urban freight transport

- Solution 1: consolidation
- Solution 2: change of fleet
- Solution 3: regulation and pricing
- Solution 4: CSR, corporate strategies
- Solution 5: better data and reporting

1: Consolidating, going as close as possible to final destination

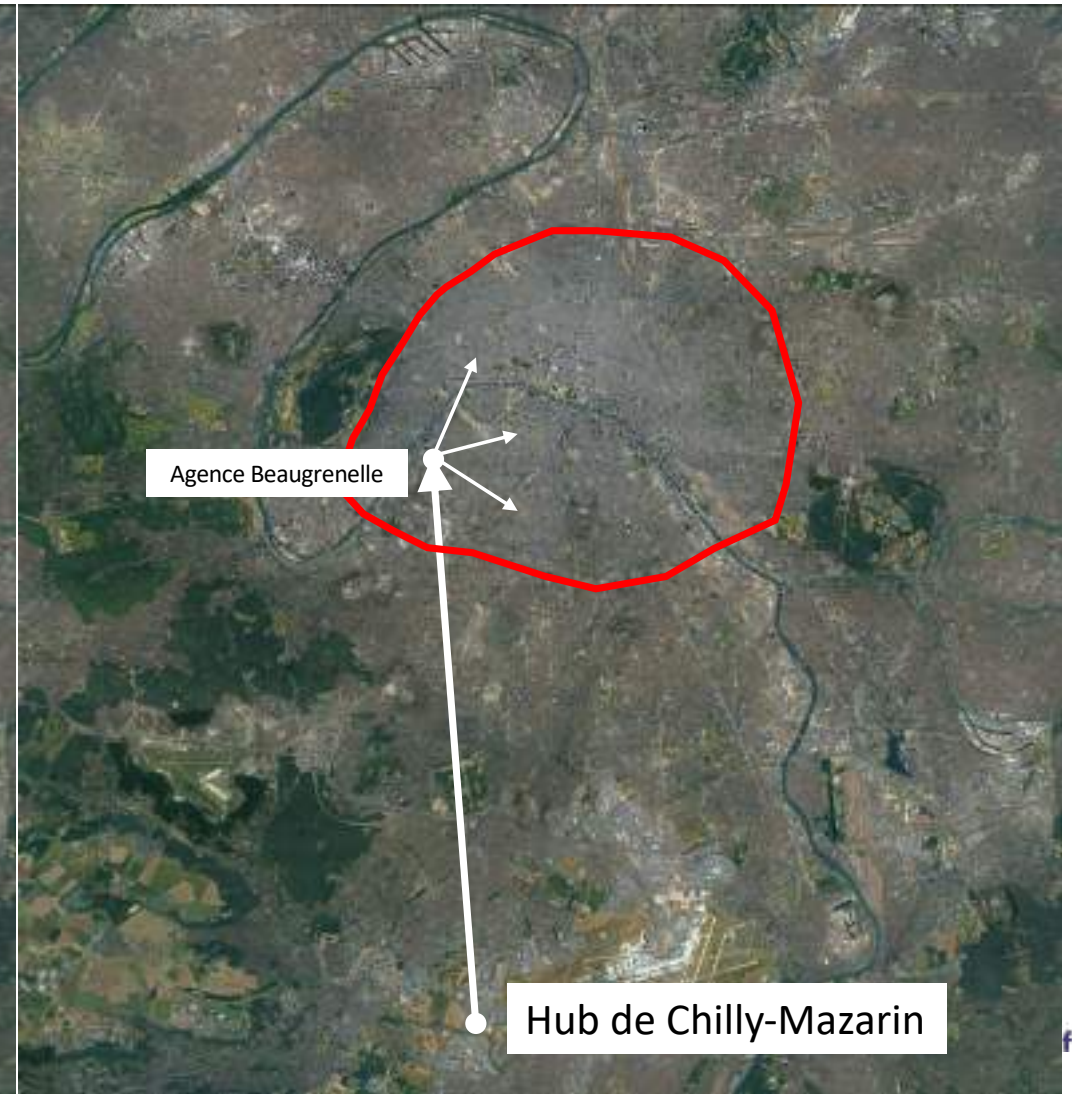
WITHOUT an urban hub



-51% CO₂
emissions

*Jonction
2017*

WITH an urban hub



2. Change of fleet: a huge increase in cycle-logistics in European cities



International Cargo Bike Festival Groningen

June 14-16th 2019

One of the main advantages:
access to bike lanes

Electric vans: help small companies acquire them

Nov 2021 in France:
4.3% new vans are electric
(AVERE)

According to sources:

- TCO is OK after 5 years
- TCO remains +10%



Zero emission trucks are still too expensive

First customer of full-electric Volta Zero signs multi-million pound deal

October 2, 2020 Chris Tindall



Tesla Semi : le camion électrique livré à partir de 2021

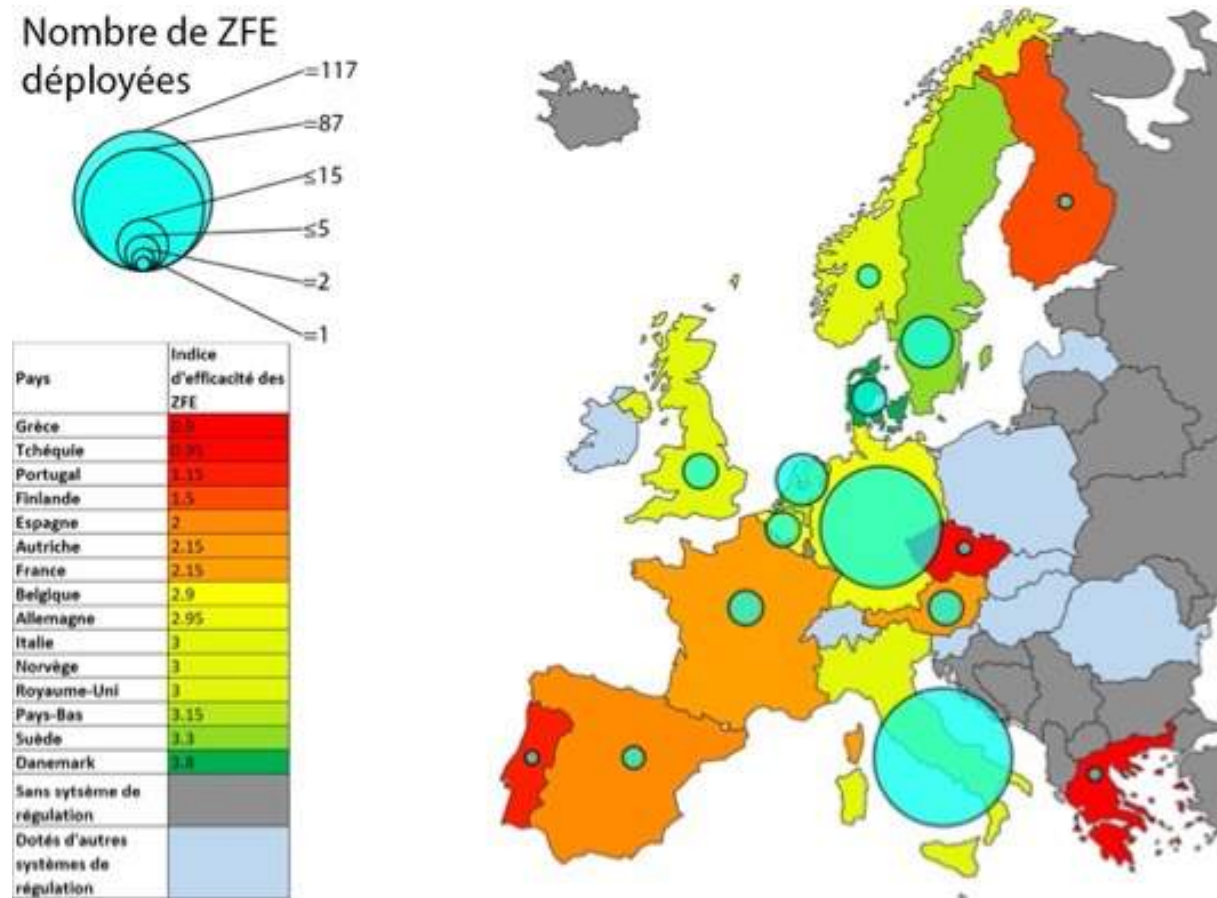


Lorries represent a third of deliveries in French cities





3. Regulate and price



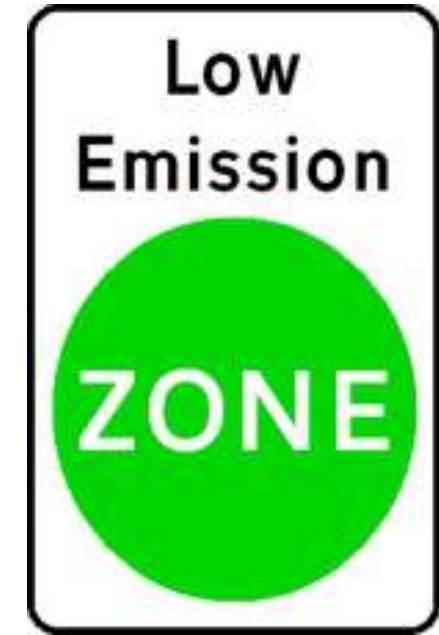
Low Emission Zones
banning trucks, vans in
Europe

London Low Emission Zone

- All the metropolitan area
- Lorries and large vans
- Euro VI for lorries
- *Ultra Low Emission Zone* in a large central area (Euro 6) (for all veh including vans but not lorries)
- **Three *Zero Emission Zones* by 2025**
- Automated plate reading cameras (ANPR cameras)



Monitoring CCTV



4. CSR

Many programmes to support shippers, carriers, logistics companies in decarbonizing



- France: only 35 trucking companies have a label, over 40,000 trucking companies in France, very few in freight

5. Why get better data for urban freight?

- Support traffic management and city planning through better modeling of freight
- Monitor progress of an urban freight strategy
- Support decarbonization of freight through better impact assessments
- Provide tools for cost–benefit analysis of traffic regulations such as low/zero emission zones including positive and negative impacts on businesses
- Support better design of low/zero emission zones such as optimum size
- Stakeholder involvement:
 - Benchmark for freight companies
 - Freight joint strategy between all relevant local stakeholders, based on actual diagnostic and good data (build trust)
- Modeling/simulation of alternative city logistics models

New methods for urban freight data collection

- Data from telecom operators
- Logistics operators' data
- Automated plate-reading cameras' data

Privacy statement from Transport for London on use of CCTV data

On a case by case basis we may use and share CCTV images for research and analysis purposes. For example these may be used to improve the management of health and safety incidents, or travel demand management.

CCTV images from London Underground are to be analysed by Newcastle University in the fight against covid-19 under an agreement with TfL, which is part of a wider research programme led by the Department for Transport and the SAGE subgroup on Environmental and Modelling. The research will analyse images to quantify the proximity of people and their surface contact whilst using public transport, as part of wider research to understand the transmission of covid-19. The CCTV data is encrypted and steps are taken to anonymise the footage. This research is subject to a Data Protection Impact Assessment as well as a confidentiality agreement between the University and TfL.

Similar research is being undertaken by University College London to understand how infection risk would vary according to different levels of crowding using encrypted CCTV data alongside data from surface and air sampling. Anonymisation techniques are applied to prevent identification of individuals and this research is also subject to a Data Protection Impact Assessment as well as a confidentiality agreement between the University and TfL.

- Dutch cities will implement zero emission zones by 2025 with a specific strategy on freight
- Rotterdam Zero-Emission City logistics strategy includes a plan for freight data-sharing with operators

Zero-Emission Zones

Don't Wait to Start with Freight!

December 2020



Ressources

- LOGISTICS CITY CHAIR: www.lvmt.fr/en/chaieres/logistics-city-sogaris/
- METROFREIGHT www.metrotrans.org/metrofreight
- Browne, M., Behrends, S., Woxenius, J., Giuliano, G., Holguin-Veras, J. *Urban logistics. Management, policy and innovation in a rapidly changing environment* Kogan Page, London
- Urban Freight Lab: <https://depts.washington.edu/sctlctr/urban-freight-lab-0>
- Urban freight platform: <https://www.chalmers.se/en/centres/lead/urbanfreightplatform/Pages/default.aspx>

