

Practices in Freight Planning
Balancing Sustainability and Resiliency

Sustainable freight planning in France and Europe

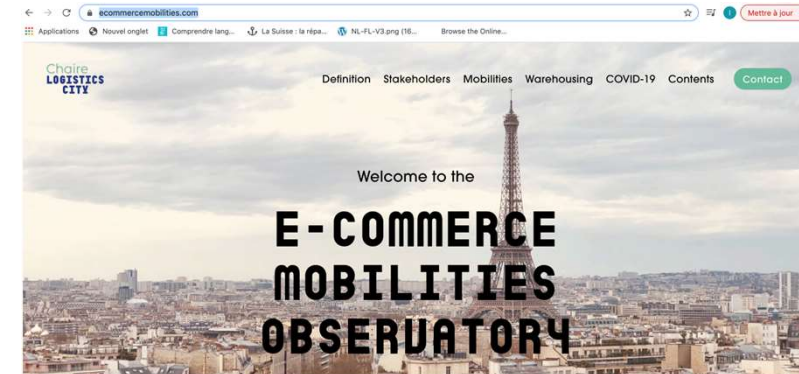
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- Research oriented Chair
- Warehouses, innovations, new trends in consumption and impacts on city logistics

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

Results available online:

- Observatory of ecommerce mobilities
- Logistics real estate and relationships with urban form in 74 large cities around the world



European transport policy somewhat includes sustainable freight

- Integrated vision of transport, including freight (freight is included in the various topics of European Union transport policy)
- Key word is **internalizing external costs**: truck pricing principles for example are set at the EU level
- Strong focus on **investments in multimodal infrastructure**: « Achieving the ambitious climate goals also requires a shift to more sustainable transport modes such as rail and inland waterways. »
- Focus on « **interoperability** », technologies that can work from one country to another
- EU **Emissions Trading System** is going to integrate transport
- **Emission standards** for vehicle manufacturing

European Green Deal (2021) and various emissions standards

- EU's climate, energy, transport and taxation policies must be fit for **reducing net greenhouse gas emissions by at least 55% by 2030** compared to 1990 levels
- EU-wide **CO₂ emission standards for heavy-duty vehicles** adopted in 2019 setting targets for reducing average emissions of new lorries for 2025 and 2030
- **Definitions** setting
 - clean heavy-duty truck : hydrogen, battery electric (incl. plug-in hybrids), natural gas (CNG, LNG, incl. biomethane), liquid biofuels, synthetic and paraffinic fuels, LPG
 - Zero-emission heavy-duty trucks: no tailpipe CO₂ emissions
- Manufacturers must meet **targets for lorry fleet-wide average CO₂ emissions** of new lorries (compared with 2019-2020):
 - from 2025 onwards: 15% reduction
 - from 2030 onwards: 30% reduction

PM and NOx emission limits: Euro standards

Table 1

EU emission standards for heavy-duty CI (diesel) engines: Steady-state testing

Stage	Date	Test	CO	HC	NOx	PM	PN	Smoke
			g/kWh				1/kWh	1/m
Euro I	1992, ≤ 85 kW	ECE R-49	4.5	1.1	8.0	0.612		
	1992, > 85 kW		4.5	1.1	8.0	0.36		
Euro II	1996.10		4.0	1.1	7.0	0.25		
	1998.10		4.0	1.1	7.0	0.15		
Euro III	1999.10 <i>EEV only</i>	ESC & ELR	1.5	0.25	2.0	0.02		0.15
	2000.10		2.1	0.66	5.0	0.10 ^a		0.8
Euro IV	2005.10		1.5	0.46	3.5	0.02		0.5
Euro V	2008.10		1.5	0.46	2.0	0.02		0.5
Euro VI	2013.01	WHSC	1.5	0.13	0.40	0.01	8.0×10^{11}	

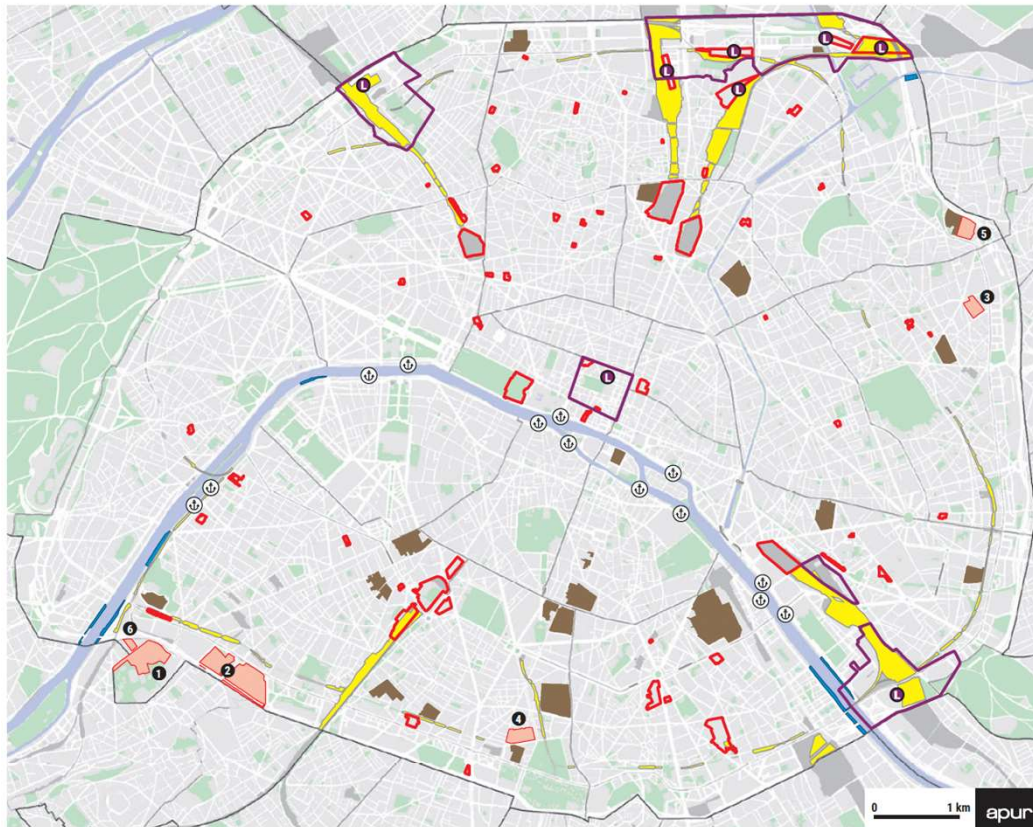
^a PM = 0.13 g/kWh for engines $< 0.75 \text{ dm}^3$ swept volume per cylinder and a rated power speed $> 3000 \text{ min}^{-1}$


Euro VII is in the making, European Commission proposal should be announced in 2022

National level: various ways to set up a sustainable freight strategy, example of France

- National State and municipalities mostly, with various other authorities at a lesser extent (Regions)
- Freight operations can't be subsidized except for (strictly) intermodal
- Freight investments:
 - rail freight infrastructure (new strategy 2021)
 - acquisition of clean veh. eg 2022: €150,000 per battery electric large truck
- Maximum gross weight of trucks set by the national level at 44 tons (very different in other European countries)
- Regions: set up regional master plans (guidelines) and by 2024 will decide on truck pricing regulation on major roads
- Cities:
 - Euro standards are used to define **truck access bans** in metropolitan areas
 - New zoning plans favor urban warehouses

2016 zoning ordinance of Paris: regulations incentivizing the implementation of logistics facilities



- Areas dedicated to large urban services
 - River banks
 - Rail areas
 - Hospitals or former hospitals
 - Other
- 61 location perimeters for logistics activities 

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



L. Dablanc

Chapelle logistics hotel

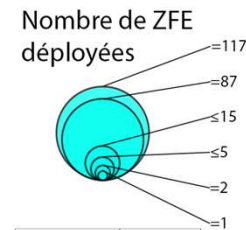
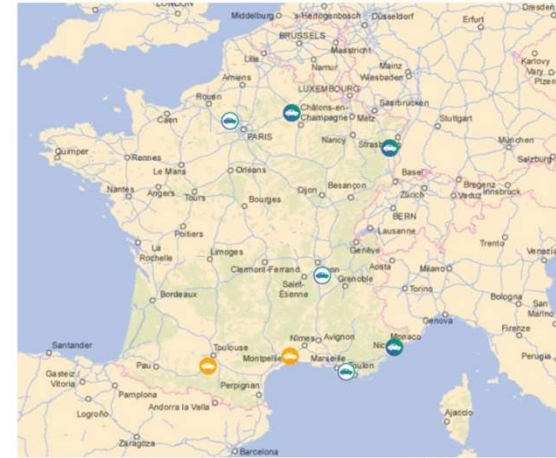


Logistics facility from the recycling of a gas station (project)

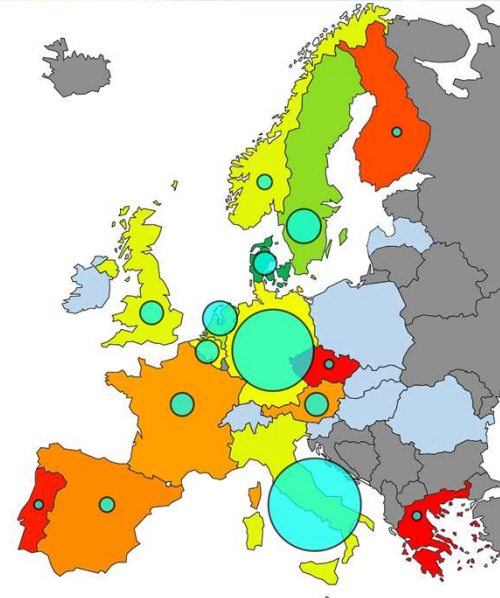


Low Emission Zones: targets by municipalities with a strong push from the national government

- In 2025 all 40 largest metro areas in France will have to implement a Low Emission Zone banning trucks older than 2014 and vans older than 2011
- France is shy in terms of LEZ number, standards, enforcement
- End of diesel: 2024 Paris, 2025: Grenoble, 2026: Lyon, 2028: Strasbourg
- End of ICE cars and vans 2035 in the country
- End of ICE trucks 2040 in the country



Pays	Indice d'efficacité des ZFE
Grèce	0.9
Tchéquie	0.65
Portugal	1.15
Finlande	1.5
Espagne	2
Autriche	2.15
France	2.15
Belgique	2.9
Allemagne	2.95
Italie	3
Norvège	3
Royaume-Uni	3
Pays-Bas	3.15
Suède	3.3
Danemark	3.8
Sans système de régulation	
Dotés d'autres systèmes de régulation	



Freight forums (consultation) and freight data collection

- All major cities are engaged in freight partnerships with the industry representatives
- From specific freight surveys to new methods to collect data
 - Big data from ANPR cameras (automated number plate recognition)
 - Data sharing with freight operators
- Data serve freight modelling and carbon footprint assessments



Zero emission city logistics in the Netherlands and *data sharing* with logistics service providers

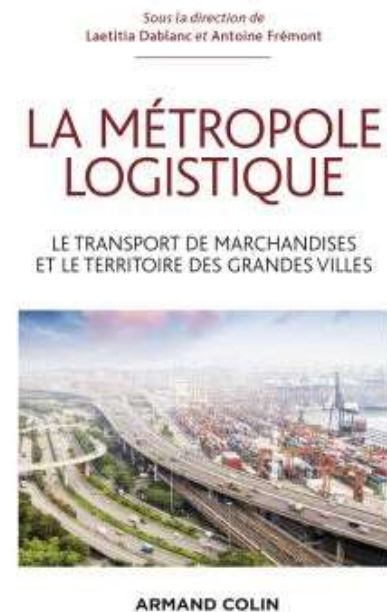
Roadmap to zero emission city logistics, Rotterdam 2025

Expected transition to zero emission city logistics by 2025
Rotterdam city centre

Segments	Subsegments	Most common type vehicles and propulsion 2019			Most common type vehicles and propulsion 2025		
Fresh	Retail (fresh)						
	Hospitality and specialists						
	Fresh home deliveries (groceries and prepared meals)						
General freight	Retail chains (non-fresh)						
	Specialists (including fashion, hanging garments)						
	Two-person home deliveries (furniture, white goods)						
Waste	Waste collection: households						
	Waste collection: businesses						
Express and parcels	Express and parcels						
Facilities/ service	Maintenance and service						
	Office supplies, hospitals and municipal services						
Construction	Public space/ infrastructure/making land construction-ready						
	Building shell						
	Completion/interiors						
	Personnel						

Ressources

- CHAIRE LOGISTICS CITY: www.lvmt.fr/en/chaieres/logistics-city-sogaris/
- METROFREIGHT www.metrotrans.org/metrofreight
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- 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
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- Urban freight platform: <https://www.chalmers.se/en/centres/lead/urbanfreightplatform/Pages/default.aspx>
- World Economic Forum (2020) The future of the last-mile ecosystem



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