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'Proximity logistics': characterizing the development of logistics facilities in dense, mixed-use urban areas around the world

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Urban logistics is changing rapidly, with consumer demand and supply as first force of change: e-commerce, omnichannel retail, 'logtech' and the gig economy



Policies and planning addressing goods transport's negative impact, both restrictive and supportive, are a second force of change



Without intervention, the number of e-commerce delivery vehicles will increase by 36% until 2030, increasing emissions from delivery traffic by 32% and congestion by over 21%

Delivery vehicles Emissions Congestion Million vehicles Million tonnes CO₂ Average commute,* minutes +36% +6 Mt +21%25 7.2 64 53 Last-mile 19 -----------5.3 induced Parcel Freight 2019 2030 2019 2030 2019 2030 * Average commute for representative city

NOTE: Top 100 cities globally only.

2030 base case scenario

Efficient and zero-emission urban logistics relies on facilities closer to where goods are consumed, especially in high-demand areas



'Proximity logistics', or the development of logistics facilities in dense, mixed-use urban areas, extends and refines global logistics networks and counteracts some effects of 'logistics sprawl'



"Our results suggest that Amazon's expansion led to significant shipping cost savings, facilitated the realization of aggregate economies of scale, and lowered the external costs of e-commerce (Houde et al., 2021)." Research objective is to characterize and contextualize proximity logistics through collaborative, comparative international case studies: New York City, Paris, Seoul, Shanghai and Tokyo



Research questions center around regulatory context towards and characteristics of urban logistics facilities in each case study city



A typology of seven urban logistics facility types, providing a consistent base for discussing the case studies

Logistics facility (Rodrigue, 2020)	Size (Onstein et al., 2021)	Service area (Onstein et al., 2021)	Activity (Rodrigue, 2020)
Inbound cross-dock facility	M to XXL	Regional, national or international	Storage
Fulfillment center	M to XXL	Regional, national or international	Storage and fulfilment
Parcel hub	S to XXL	Regional	Storage and fulfilment
Sortation center	S to XXL	Regional	Cross-docking
Delivery station	XS	Local	Cross-docking
This facility type also covers urban consolidation centers (Dupas et al., 2020; Marujo et al., 2018; Rudolph et al., 2021); micro-consolidation centers (Janjevic and Ndiaye, 2014; Marujo et al., 2018; Rudolph et al., 2021); micro-hubs which can be independent, shared or consolidated (Kim and Bhatt, 2019; Rudolph et al., 2021; Russo et al., 2021; Schodl et al., 2019); and mobile hubs (Arvidsson and Pazirandeh, 2017; Sheffi, 2020; Srivatsa Srinivas and Marathe, 2021; Verlinde et al., 2014).			
Fast delivery hub	XS	Local	Storage and fulfilment
This logistics facility type also covers urban satellites (Alfieri et al., 2021); dark stores; and warestores (Sheffi, 2020).			
Pick-up location	xxs	Local	Collection
Local freight station			
These facility types also cover parcel lockers; pick-up points (Onstein et al., 2021); click-and-collect stores; and drives (Buldeo Rai et al., 2019).			

New York City (Tejada & Conway): different entities involved, logistics facilities can be developed in all areas except residential without specific permission



New York City (Tejada & Conway): large fulfillment centers in Staten Island, few multi-story developments in Brooklyn and Queens, Amazon has largest logistics footprint



Paris (Buldeo Rai & Dablanc): urban planning code regards logistics facilities as 'necessary', introducing location perimeters on which development or reconstitution is obligatory



Reference: City of Paris, 2016

Paris (Buldeo Rai & Dablanc): some historical sites and large multiactivity and multi-story redevelopment projects, many micro delivery stations



Seoul (Kang): need for urban logistics facilities acknowledged by urban freight plans and national master plan, recent enactment enabling public interventions in development of facilities



Seoul (Kang): revamping and remodeling outdated sites into mixed-use, multi-story, automated logistics facilities



Shanghai (Yuan): promotion of shared urban logistics facilities supported by national government agencies and urban plans and guidances, but difficulties remain



Shanghai (Yuan): limited large urban logistics facilities left (stateowned or foreign), small facilities are either self-operated or shared



Tokyo (Sakai): favorable zoning for urban logistics facilities but governmental programs enacted, especially for large facilities



Tokyo (Sakai): fast-growing development of multi-tenant logistics facilities, often replacing old sites



In conclusion, proximity logistics identified as a trend throughout all cities studied in this research

- > Fulfilment centers and delivery stations
- > E-commerce is an undeniable, albeit not the only, accelerator
- > Prioritization of brownfield developments
- > Multi-story, multi-tenant and multi-activity logistics facilities
- > Different degrees of automation
- > Different degrees of governmental intervention