

Logistics regimes and metropolitan logistics transition: a socio-spatial framework from a cross-reading of Paris and Casablanca

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Abstract

Purpose – This paper examines how metropolitan logistics systems evolve through the coexistence and recombination of multiple logistics arrangements. Building on insights from socio-technical transition studies, comparative urbanism and logistics geography, we propose the concept of logistics regimes as a socio-spatial framework for analysing long-term transformations in city logistics.

Design/methodology/approach – Empirically, the paper develops a qualitative, iterative and reflexive comparison of logistics transformations in Paris and Casablanca. Rather than treating these metropolitan areas as directly comparable cases, we mobilise a cross-reading of emblematic logistics centralities as analytically productive entry points for examining metropolitan logistics dynamics. This approach highlights recurring combinations of infrastructures, labour arrangements, governance configurations and spatial forms that structure the circulation of goods.

Findings – The analysis identifies five ideal-typical logistics regimes: a standardised and financialised peri-urban regime, an intermediate logistics regime, an urban logistics regime, a family-run or artisanal regime and a service-based regime. These regimes do not constitute successive stages of development, nor mutually exclusive categories. Rather, they coexist, overlap and interact within metropolitan logistics systems, generating differentiated trajectories of logistics transition.

Originality/value – The paper argues that the logistics transition is best understood as a process of regime recombination, in which inherited and emerging arrangements are continuously rearticulated under changing spatial, economic and institutional conditions. This perspective challenges conventional North–South binaries and linear narratives of logistics modernization. It also highlights the differentiated environmental and social trade-offs associated with each regime, suggesting that sustainability cannot be reduced to technological innovation or logistics efficiency alone. By articulating socio-technical transitions with comparative urbanism, the paper provides a flexible framework for analysing transformations of city logistics.

Keywords Logistics transition, Logistics regimes, City logistics, Comparative urbanism, Postcolonial urban studies, Informality, Socio-technical transitions

Paper type Research article

1. Introduction

What do the standardized warehouses of Paris and the street-level logistics of Casablanca have in common? Both are part of a fragmented yet interconnected logistics landscape that defies linear narratives of modernization. In Southern cities, logistics, long overlooked, is now being framed as an engine for economic competitiveness and territorial integration, while in Northern metropolises, it is primarily approached through the lens of environmental sustainability,



congestion and social externalities. Despite these differences, the circulation of goods – through transport, warehousing and distribution – has become a structuring force of urban change, reshaping metropolitan morphologies, labour relations and governance arrangements.

While the concept of transition is well-established in urban and energy studies, the concept of a logistics transition remains under-theorized (Mareï, 2023). This article addresses this gap by proposing the notion of logistics regimes as a framework to analyse logistics change. We define a *logistics regime* as a stabilized configuration of actors and practices involved in the circulation of goods, structured by specific labour relations and regulatory frameworks and materialized through particular infrastructures and spatial forms at the metropolitan scale. In this context, the following research question is posed: *how can we frame logistics change in cities without reducing it to a linear process of modernization or the diffusion of Northern models?* Building on socio-technical transition studies (Geels, 2005; Markard et al., 2012), we argue that logistics transition does not involve the replacement of one regime by another. Instead, they entail a stratification of interdependent regimes, whose relative hierarchy evolves over time without the disappearance of inherited forms.

This approach moves beyond binary oppositions (formal vs informal, modern vs traditional, North vs South) to account for the resilience and recombination of diverse logistics forms within the same metropolitan space. Empirically, we illustrate this framework through a comparative analysis of Paris and Casablanca, two metropolises that, despite their differences, exhibit shared dynamics of logistics sprawl, land-use pressures and differentiated governance frameworks (Debie and Mareï, 2019; Raimbault and Heitz, 2023). Our analysis reveals five distinct logistics regimes that coexist and interact in both cities: the standardized and financialized peri-urban regime, dominant in Paris; the intermediate logistics regime, resilient in both cities; the urban logistics regime, emerging in Paris and niche in Casablanca; the family-run or artisanal regime, dominant in Casablanca; the service-based regime, niche in both cities.

Our findings show that logistics transition is a process of regime recombination, where dominant regimes (e.g. standardized peri-urban logistics in Paris, family-run logistics in Casablanca) coexist with secondary or niche regimes. This challenge linear narratives of modernization and highlights the context-specificity of logistics transition, shaped by historical trajectories, institutional arrangements and socio-economic conditions. In this context, we adopt the concept of *city logistics* (Taniguchi and Thompson, 2014) over *urban freight transport* or *urban logistics*. While the latter often refers to the operational organisation of freight movements within urban areas, particularly issues such as last-mile delivery, *city logistics* provides a more comprehensive framework. It encompasses planning, governance and the integration of freight transport into broader urban development objectives, thereby allowing logistics to be understood not merely as a sectoral activity but as a key component of metropolisation and urban transformation (Hesse, 2008; Dablanc and Fremont, 2015; Hesse and Rodrigue, 2004), shaping the organisation of space, economic activities and social relations. However, as recent urban logistics research has itself become highly systemic (Monios et al., 2023), the contrast between the two terms may be better framed as a difference in analytical tradition rather than a strict difference in scope. The strongest argument is that *city logistics* denotes a specific conceptual and analytical framework, whereas *urban logistics* serves as a broader descriptive label for freight activities in urbanised areas.

The paper is structured as follows: Section 2 reviews the literature on city logistics and sociotechnical transitions. Section 3 outlines the methodological framework and research design. Section 4 compares logistics dynamics in Paris and Casablanca. Section 5 details the findings in light of the five logistics regimes. Section 6 discusses these findings through a sustainability lens.

2. Literature review

Rather than conducting a bibliometric review, we selectively engage with bodies of literature on the spatial dynamics of city logistics; the persistence of informality in metropolitan systems; socio-technical transition studies and logistics as an element of sustainable mobility.

2.1 Spatial dynamics of city logistics: worldwide trends

Since the early 2000s, an expanding body of research has documented the reconfiguration of warehouse location patterns in large metropolitan areas, in connection with profound transformations in logistics, transport and industrial systems. Pioneering contributions by [Hesse \(2008\)](#), [Dablanc and Rakotonarivo \(2010\)](#) and [Cidell \(2011\)](#) played a foundational role in establishing logistics as a central urban issue. These studies highlighted the warehouse as a key urban object, whose forms, functions and spatial distribution are shaped by productive systems, transport organisation and land markets, while also drawing attention to the spatial consequences of warehousing development, notably its peripheralisation and contribution to urban sprawl. Building on this literature, subsequent research has conceptualised these dynamics through the notions of logistics sprawl and logistics suburbanisation, describing the outward displacement and clustering of logistics facilities toward low-density metropolitan fringes.

These processes have been extensively documented in Northern metropolitan regions and are now widely recognised as a dominant trajectory of logistics development. In the Paris region, a dense body of work has analysed the progressive relocation of warehouses from central and inner suburban areas toward peri-urban locations, driven by rising land prices, planning constraints and the growing demand for large, highly accessible sites ([Dablanc and Rakotonarivo, 2010](#); [Raimbault, 2014](#); [Heitz and Dablanc, 2015](#); [Raimbault and Heitz, 2023](#)), revealing a structured process linked to the emergence of a logistics real estate market and the growing influence of financial and development actors. Comparable patterns are observed globally: in North America, logistics sprawl and warehouse clustering are documented across multiple cities ([Kang, 2020](#)), including California ([Jaller et al., 2022](#)) and Seattle ([Fried and Goodchild, 2023](#)); in Europe, similar dynamics are highlighted in Spain ([Alvarez-Palau et al., 2023](#)), Central Europe ([Krzysztofik et al., 2019](#)) and the Netherlands ([Onstein et al., 2019](#)); and in East and South Asia, logistics suburbanisation is analysed in Seoul ([Kang, 2022](#)), Shanghai and the Yangtze River Delta ([He et al., 2019](#)), Wuhan ([Yuan and Zhu, 2019](#)) and Mumbai ([Gupta, 2017](#)), revealing both the diffusion of standardised logistics development models and the persistence of context-specific trajectories.

More recently, studies focusing on cities of the Global South have extended and nuanced these analyses. Research conducted in South America ([Guérin et al., 2021](#)), South Africa ([Trent and Joubert, 2022](#)) and Morocco ([Debie and Mareï, 2019](#)) shows that logistics sprawl and suburbanisation are also emerging in Southern metropolitan regions, albeit with different temporalities, governance arrangements and degrees of standardisation. Meanwhile, other studies have emphasised the significance of informality within the street-vending supply chain ([Sekhani et al., 2019](#); [Bouhali, 2018](#)). These works emphasise the coexistence between large, standardised logistics developments, often promoted through public–private initiatives, and more fragmented or less industrialised logistics organisations embedded in urban fabrics ([Mareï and Savy, 2021](#)). Similarly, [Malik et al. \(2017\)](#), compare freight parking practices in Gothenburg and Delhi, and illustrate how comparative urban logistics can reveal the coexistence of formalised and informal practices as structurally embedded responses rather than transitional deviations.

Public actors play a decisive but highly differentiated role in shaping logistics development trajectories. Recent work highlights the diversity of public action and the uneven integration of logistics issues into planning and regulatory frameworks ([Heitz and Berthon, 2025](#)). Drawing on [Cowie's \(2017\)](#) framework of policy maturity, logistics governance can be understood as evolving through different stages, ranging from limited recognition to more integrated and strategic approaches. In the Paris region, this relative maturity is reflected in the multiplication of planning instruments addressing logistics and freight, whereas in Casablanca logistics governance remains largely centralised and project-based, with more limited involvement of local authorities ([Debie and Mareï, 2019](#); [Mareï, 2023](#)).

2.2 *The persistence of informality in metropolitan systems*

Analyses of economic practices underline the extent to which highly standardised logistics systems continue to rely on more informal or artisanal modalities of organisation and work. Research on urban services in the Global South, such as waste management or access to water and electricity, emphasizes the plurality of actors and techniques required to serve heterogeneous urban spaces, ranging from small entrepreneurs to multinational firms (Jaglin, 2017). While informality has long been associated with cities of the South (Portes, 1983; Daniels, 2004), recent work demonstrates its relevance for understanding urban economies in the Global North and its diffusion across multiple sectors (Roy, 2005; Jacquot et Morelle, 2018; Ayentimi and Burgess, 2021; Burban, 2023). The delivery industry is particularly affected by what can be described as a “grey zone of employment”, a spectrum of ambiguous practices that are neither fully legal nor outright illegal, but instead operate through extra-legal relationships or informal arrangements. This concept moves beyond a strict legal binary to capture the complex, often unregulated, dynamics between employers and workers (Azais et al., 2017).

Together, logistics sprawl, platformisation, financialisation and labour precarity point to broader transformations of metropolitan logistics systems that extend beyond technological change alone. These transformations simultaneously affect spatial organisation, governance, work and urban development, underscoring the need to analyse city logistics through the lens of socio-technical transition studies and the coexistence of multiple logistics regimes.

2.3 - *Logistics regime and socio-technical transition studies*

To develop a broader reflection on the global transformation of city logistics, this article conceptualises logistics transition through the notion of logistics regimes, as defined in the introduction. The definition of logistics regimes deliberately integrates dimensions that are often analysed separately, including logistics real estate, work organisation, governance arrangements, urban form and supply-chain structures. Building on this definition, we argue that a logistics transition does not correspond to the replacement of one regime by another, but rather to a stratification of interdependent regimes whose relative hierarchy evolves over time without the disappearance of inherited forms.

This approach draws on insights from socio-technical transition studies, particularly the multi-level perspective (MLP), which emphasises the coexistence and co-evolution of regimes, sub-regimes and niches within broader structural contexts (Geels, 2005; Markard et al., 2012). However, rather than applying the MLP in a rigid or sectoral manner, we mobilise it as a flexible analytical framework adapted to urban logistics. We consider city logistics as a socio-technical system (Rip and Kemp, 1998) composed of multiple regimes and sub-regimes, hierarchised but co-evolving, rather than as a system dominated by a single regime opposed to marginal niches. Our approach also resonates with work in comparative urbanism and postcolonial urban studies, which has emphasised the limits of universalising urban models and the importance of historical, institutional and socio-economic specificities (Roy, 2016).

The utility of regime-based frameworks for qualitative analysis is further demonstrated by Blaszkiewicz’s (2021) flow regimes, which capture uneven rhythms of good flows as lasting socio-technical arrangements, and Dobler’s (2016) typology of cross-border trade, illustrating how border regimes shape dynamics through competing actor visions. These cases reinforce the value of our adapted MLP framework for studying city logistics as a stratified, context-dependent system.

2.4 *Logistics as an element of sustainable urban mobility*

Logistics is a crucial component of sustainable urban mobility (Cui et al., 2015; Anderson et al., 2005). These studies highlight the need to regulate an activity essential to territorial functioning, yet burdened with numerous negative externalities. Indeed, logistics contributes to congestion, pollution and the persistent growth of transport-related greenhouse gas

emissions over different geographical scales (Dablanc and Rakotonarivo, 2010; McKinnon *et al.*, 2015). These externalities manifest in both the expansion of road freight transport and the sprawl of warehouse locations, driving land consumption and soil artificialization. In the Global North, the proliferation of vast peripheral warehouses, exemplified by the Paris region, embodies these externalities, while in the Global South, the development of standardized logistics zones on the outskirts of major cities demonstrates the global normalization of this urban logistics landscape.

In line with this literature, and building on governance insights from sustainability transitions (Smith *et al.*, 2005), we argue that logistics transitions should not be understood as trajectories of convergence, but as processes of recombination shaped by differentiated urban contexts. Importantly, our analysis also highlights sustainability as a central dimension of urban logistics transitions. The coexistence of multiple logistics regimes presents both challenges and opportunities for more sustainable urban futures.

3. Methodology: an iterative, comparative and reflexive approach to city logistics

This paper proceeds from a qualitative, iterative and comparative approach to analyse long-term transformations of metropolitan logistics systems. Grounded in geographical observation and reflexive comparison rather than quantitative modelling, it is designed to capture logistics transition as a complex, stratified and context-dependent process.

3.1 An iterative research trajectory grounded in long-term engagement

The research presented in this article builds on a long-term and cumulative empirical trajectory. The analytical framework did not precede the empirical work but emerged progressively through iterative movements between field observations, literature review and comparative interpretation. This approach aligns with qualitative methods that privilege theory-building through empirical engagement rather than hypothesis testing. It resonates with the extended case method initially developed in anthropology and sociology.

Empirical work in Northern metropolitan contexts, particularly in the Paris region, draws on research conducted since the early 2010s and builds on a longer intellectual lineage in the geography of logistics in Île-de-France. Foundational works established key analytical bases for documenting metropolitan logistics dynamics. Against this background, one of the authors carried out doctoral research between 2013 and 2017, followed by successive research works focusing on logistics real estate dynamics and suburban warehousing (Heitz, 2017). This work was further consolidated through the Metrofreight research program (2013–2020), which structured empirical investigations and comparative insights on freight and logistics in the Paris region and in the three others metropolitan areas (Los Angeles, New York, Seoul).

In parallel, empirical research in Southern contexts builds on sustained work conducted since at least 2012 on logistics systems, transport infrastructures and urban services in cities of the Global South (Debie and Marei, 2019; Marei and Piveteau, 2022 focusing on Morocco; Marei, 2023 extending the analysis to Vietnam, Mauritania and Egypt; Lombard and Marei, 2024; Marei *et al.*, 2025 providing comparative insights across African cities). This research includes multiple case studies, mainly in Africa, and long-term engagements, with particular attention to family-based and artisanal actors and the structural role of informality. Since 2021, these two trajectories have been brought into closer dialogue through the ANR Translog program, enabling an iterative and reflexive back-and-forth between Northern and Southern contexts (Bruxelles, Paris, Casablanca, Nouakchott) that is central to the methodological architecture of this paper.

3.2 Observation as a core method in geographical inquiry

Observation is a central pillar of our methodological approach, in line with long-standing traditions in human geography and urban studies. In this perspective, observation is not

mobilised to produce representative samples, but to extend the analytical reach of situated cases, following an extended case approach in critical geography (Peck, 2005). In the context of logistics studies, observation is particularly relevant, as logistics systems tend to be spatially fragmented and operationally opaque. Many of their key components (intermediate warehouses, informal storage spaces, last-mile delivery practices) remain largely invisible in aggregated data. Like Gregson (2017), our qualitative geography approach allows us to analyse urban logistics through its frictions with the territory, thereby revealing the gap between logistics discourse and its everyday materiality. Our observational work therefore includes repeated site visits to logistics zones, warehouses, intermediate storage facilities and urban delivery spaces with close attention to spatial configurations. These observations were conducted over extended periods (2010–2026) and across multiple sites in Paris and Casablanca, enabling the identification of recurring patterns, points of tension and a diachronic interpretation of logistics transformations. Our objective was not to document short-term logistics practices, but to analyse long-term regime dynamics. To avoid treating observation as anecdotal or impressionistic, objectification is ensured through temporal repetition, cross-validation between researchers, confrontation with literature and triangulation with complementary sources (targeted interviews with logistics actors and public stakeholders, planning documents).

In operational terms, this observational strategy relies on a cross-reading of emblematic logistics centralities mobilized as analytically productive entry points. In the Paris region, repeated observations focused on logistics spaces illustrating contrasted yet interconnected metropolitan configurations, including large-scale suburban logistics zones (Garonor, Sénia–Thiais–Wissous), intermediate wholesale and redistribution environments (Aubervilliers, Rungis) and emerging proximity logistics arrangements. In Casablanca, observations similarly mobilized Zenata, Sidi Othmane Wholesale Fruit and Vegetable Market and Derb Omar as entry points for examining logistics suburbanization, wholesale embeddedness and urban redistribution dynamics. These sites are not treated as representative or exhaustive samples of metropolitan logistics systems; rather, they are used to interrogate how recurring metropolitan pressures (land constraints, accessibility, labour availability and market proximity) translate into differentiated socio-spatial configurations. In this sense, the comparison is conceived less as a systematic juxtaposition of equivalent cases than as a reflexive cross-reading of logistics transformations across metropolitan contexts.

3.3 A reflexive approach to logistics research and comparative design

The methodological stance adopted in this paper is explicitly qualitative and reflexive, and occasionally borders on ethnographic sensibilities, without claiming full ethnographic immersion. Reflexivity plays a central role in this methodological framework. Drawing on critical urban scholarship (Robinson, 2016; Roy, 2016; Denis, 2015), analytical categories such as formal/informal or modern/traditional are treated not as neutral descriptors but as constructs that must be continuously interrogated through empirical engagement. This stance is particularly important in a North–South comparative perspective, where Southern cities are approached as analytically productive spaces rather than as sites of deviation or lag. In line with comparative urbanism and postcolonial urban studies, comparison is thus conceived beyond hierarchical or diffusionist models, and mobilised to examine how logistics regimes coexist and evolve under distinct historical and socio-economic conditions.

Comparison is conceived here as an iterative and reflexive process, rather than as a symmetrical or protocol-driven exercise. Empirical observations made in Northern contexts initially guided the investigation of Southern cities, particularly with regard to logistics sprawl, real estate dynamics and the role of large operators. Conversely, observations of resilience, informality and artisanal logistics systems in Southern contexts prompted a renewed examination of similar phenomena in Northern metropolitan areas. Comparison is also

3.4 Methodological contribution and limitations

Our methodological approach contributes to a nuanced understanding of logistics transition as a slow, uneven and stratified process, and is particularly suited to documenting the persistence of hybrid practices that are often underrepresented in model-driven research. Several limitations nonetheless apply. First, the qualitative and case-based nature of the study limits representativeness claims and statistical inference beyond the examined cases. Second, the empirical material is heterogeneous and unevenly distributed across regimes and sites, with some configurations (e.g. peri-urban warehousing) more observable than others (e.g. subcontracting chains, informal storage, labour arrangements), potentially creating visibility biases. Third, access constraints and the operational opacity of logistics actors restrict systematic data collection on sensitive variables such as contractual relations, volumes or profitability. Fourth, the iterative and long-term character of field engagement implies observations were not produced under a single standardised protocol, potentially reducing comparability across periods and contexts.

4. Comparative logistics dynamics through metropolitan logistics centralities

Drawing on research examining logistics clusters, freight nodes and logistics urbanization, we exploit logistics centralities of Paris and Casablanca as analytically productive sites for examining how common metropolitan constraints translate into differentiated socio-spatial arrangements. Focusing on seven emblematic cases (Garonor, Sénia-Thiais-Wissous, Aubervilliers, Rungis, Derb Omar, Sidi Othmane Wholesale Fruit and Vegetable Market and Zenata), the comparison proceeds through three dimensions: large-scale peripheral logistics, intermediate logistics embedded in dense metropolitan fabrics and proximity logistics linked to urban delivery. A final subsection examines labour, governance and formalization as cross-cutting dimensions.

4.1 Peripheral logistics centralities: large-scale warehousing and metropolitan suburbanization

The comparison of Garonor, the Sénia-Thiais-Wissous corridor and Zenata suggests that peripheral logistics centralities emerge through a metropolitan compromise between the spatial requirements of large-scale logistics and the constraints of dense urban regions. Across both metropolitan contexts, large and increasingly standardized warehouses appear concentrated in suburban territories capable of accommodating extensive plots while preserving accessibility to labour markets, transport infrastructures and consumption basins.

In the Paris metropolitan region, this logic is visible in Garonor's historical development and the recent logistics concentration around Sénia, Thiais and Wissous. Developed in the 1960s, Garonor illustrates an early phase of logistics decentralization, reorganizing freight circulation through a dedicated platform integrated into metropolitan transport networks. More recent developments in the southern metropolitan fringe suggest a further consolidation stage, with dense logistics clustering and the expansion of large to XXL facilities despite strong land pressure. These spaces combine motorway accessibility, proximity to Orly and Rungis and relative access to metropolitan labour and consumer markets, suggesting logistics peripheralization in Paris remains strongly metropolitan rather than remote (Raimbault *et al.*, 2018).

Zenata points to comparable functional pressures under different institutional conditions. The development of large logistics facilities similarly appears linked to land availability, motorway accessibility and proximity to the Casablanca metropolitan market, but through a more recent and selective process supported by strong public and para-public intervention,

as evidenced by the dedicated heavy goods vehicle lane on the coastal road between the Port of Casablanca and Zenata (spanning approximately 5 km). Rather than constituting distant logistics enclaves, Zenata and the Parisian cases suggest that peripheral logistics centralities remain embedded within metropolitan circulation systems, balancing warehouse scale with operational proximity.

At the same time, the comparison points to differentiated historical trajectories. Garonor reflects a longer-term process of logistics planning associated with Fordist metropolitan organization, while the Sénia-Thiais-Wissous corridor illustrates a more mature phase of logistics concentration linked to logistics real estate specialization. Zenata, by contrast, reflects a more recent and state-supported process of logistics suburbanization embedded within broader territorial and urban development strategies. The comparison therefore suggests that similar metropolitan pressures (warehouse scale, accessibility and labour availability) produce differentiated spatial and institutional outcomes rather than a uniform model of logistics suburbanization.

4.2 Intermediate logistics centralities: permanence, displacement and metropolitan embeddedness

The comparison of Aubervilliers, Rungis, Sidi Othmane Wholesale Fruit and Vegetable Market and Derb Omar suggests that logistics suburbanization does not eliminate logistics functions embedded within dense metropolitan environments. Instead, the cases examined point to repeated processes of displacement, adaptation and persistence through which wholesale, storage and redistribution activities remain integrated into dense or intermediate urban fabrics despite land pressure and metropolitan restructuring.

In the Paris metropolitan region, the cases of Aubervilliers and Rungis illustrate successive waves of logistics displacement without complete peripheralization. Wholesale activities progressively relocated from central districts of Paris toward nearby suburban locations, including Aubervilliers, where logistics and wholesale functions remain strongly embedded within dense commercial environments (Chuang and Trémon, 2020). Likewise, the relocation of the wholesale market to Rungis in the 1960s shifted logistics functions out of the urban core while maintaining metropolitan proximity. Although increasingly pressured by suburban logistics expansion and urban land competition, both cases suggest that dense metropolitan logistics functions persist through relocation toward less central – but still highly accessible – urban territories.

Derb Omar and Sidi Othmane Wholesale Market point to a contrasting but related trajectory. Unlike Aubervilliers or Rungis, wholesale and logistics functions have largely remained embedded within the historic urban fabric of Casablanca rather than being relocated. Yet the comparison suggests comparable pressures linked to congestion, densification and urban redevelopment. Projects for relocating wholesale activities toward more peripheral metropolitan locations echo, albeit under different temporal and institutional conditions, earlier dynamics observed in Paris. However, they are currently experiencing a phase of acceleration in Casablanca, driven by the city's accelerated modernization in anticipation of the 2030 Football World Cup. Indeed, it is worth noting that the relocation of Derb Omar toward a peripheral zone approximately 20 km southeast of the city (in Mediouna), and that of the Sidi Othmane Wholesale Market to Had Soualem, some 30 km away, are included in the 2023–2028 Municipal Action Plan. This initiative aims to alleviate urban congestion and modernise commercial infrastructure. The proposals have been a recurring theme in Casablanca's municipal agenda and continue to spark intense debate, given the markets' deep-rooted association with the city's cultural and economic identity.

The comparison also highlights the importance of inherited logistics real estate and dense urban embeddedness. In the five centralities observed, logistics activities frequently operate through smaller, older and spatially fragmented premises (including wholesale buildings, ground-floor spaces, storage courtyards and mixed-use commercial environments) rather than

through the large standardized facilities observed in peripheral logistics zones. Storage systems appear more fragmented, organizational processes less mechanized and logistics functions more strongly intertwined with commercial and everyday urban activities. Taken together, the cases examined suggest that intermediate logistics centralities persist not as residual survivals of earlier metropolitan systems but as adaptive interfaces between suburban logistics infrastructures and dense urban markets. Rather than disappearing through logistics suburbanization, these spaces appear to be repeatedly displaced, reorganized and re-embedded within metropolitan environments while continuing to provide proximity, flexibility and redistribution functions.

4.3 Proximity and platform logistics centralities: re-embedding logistics within dense metropolitan environments

The comparison of proximity logistics arrangements in Paris and Casablanca suggests that logistics suburbanization has not eliminated the need for logistics functions embedded within dense metropolitan environments. Rather, the cases examined point to the emergence of small-scale logistics centralities responding to fragmented demand, delivery immediacy and accessibility constraints through new combinations of proximity, digital coordination and localized redistribution.

In Paris, this dynamic is visible in the multiplication of micro-hubs, parcel lockers, dark stores, temporary logistics spaces and cargo-bike logistics systems integrated into dense urban fabrics (Buldeo Rai *et al.*, 2023; Carracedo and Mostofi, 2022). These arrangements suggest attempts to reconnect logistics with dense urban environments by shortening delivery distances and reorganizing last-mile circulation through small and spatially fragmented infrastructures. Yet the cases examined also point to strong dependence on pre-existing metropolitan logistics systems, as urban micro-depots, pooling arrangements and bike logistics remain supplied by suburban warehouses and intermediate redistribution infrastructures.

Casablanca points to a more incremental and hybrid trajectory. Rather than relying on dedicated urban logistics infrastructures, proximity logistics is increasingly organized through dispersed commercial networks, platform-mediated delivery and neighbourhood logistics arrangements. Nonetheless, initiatives such as Express Relais via lockers located in the country's main railway stations, and delivery systems developed by e-commerce platforms in partnership with major retail actors highlight a growing commitment to the sector. In parallel, rapid and instant delivery services have developed through digital platforms like Glovo, while Jumia Food withdrew from Morocco's food delivery market in 2023.

Across both metropolitan contexts, proximity logistics centralities emerge less as autonomous systems than as intermediary arrangements connecting dense urban demand with wider metropolitan circulation systems. Their development is associated with growing platformization and fragmented delivery systems, but also with strong territorial dependence on suburban warehouses, wholesale functions and intermediate logistics spaces. Rather than signalling a return of logistics to dense cities, these cases point to a partial re-embedding within metropolitan environments through highly interconnected and proximity-oriented organizational forms.

4.4 Labour, governance and formalization as cross-cutting dimensions of logistics centralities

The comparison of the six logistics centralities and emerging proximity logistics arrangements suggests that metropolitan logistics transformations cannot be understood solely through warehouse geographies or land-use change. Across the cases examined, labour organization, governance and forms of formalisation / informalisation appear unevenly distributed across logistics centralities and contribute to shaping how metropolitan circulation systems operate.

The cases first point to differentiated labour configurations linked to the spatial and operational organization of logistics activities. Peripheral logistics centralities such as Garonor, Sénia–Thiais–Wissous and Zenata suggest forms of labour organization associated with large-scale warehousing, subcontracting and specialized logistics services. By contrast, Aubervilliers, Rungis, Sidi Othmane Wholesale Market and Derb Omar point to logistics systems more strongly embedded within wholesale trade, SMEs, transport intermediaries and localized redistribution networks. The proximity logistics arrangements discussed in [Section 4.3](#) suggest an additional layer of differentiation associated with platformization, cargo-bike logistics and localized delivery systems. Taken together, the comparison points less to a homogenization of logistics labour systems than to their coexistence across metropolitan centralities.

The comparison also nuances binary distinctions between formalized Northern logistics systems and informal and artisanal Southern ones. The cases examined suggest that hybrid forms of formalization cut across metropolitan logistics centralities in both contexts, albeit through different organizational forms and degrees of visibility. In Paris, multilayered subcontracting, temporary logistics occupations and platform-mediated labour point to fragmented and partially regulated arrangements operating within otherwise institutionalized logistics systems.

In Casablanca, the strong presence of three-wheelers, handcarts and pick-up trucks in Derb Omar or Sidi Othmane Wholesale Market suggest more explicit forms of embedded informality, linked to wholesale activities, family-run businesses and more flexible transport coordination, employing thousands of “little hands” engaged in piecework. Rather than constituting territorially bounded categories, these cases point to differentiated but overlapping combinations of formalized infrastructures and negotiated organizational practices.

Finally, governance visibility appears unevenly distributed across logistics centralities. Garonor, Sénia–Thiais–Wissous and Zenata point to relatively institutionalized logistics spaces connected to planning, infrastructure provision and metropolitan economic strategies. By contrast, Aubervilliers, Rungis, Sidi Othmane Wholesale Market and Derb Omar appear more ambiguously positioned, remaining functionally important to metropolitan circulation while facing redevelopment pressure, land competition or weaker planning recognition. Proximity logistics arrangements similarly suggest contested forms of regulation linked to platformization, temporary logistics uses and urban coexistence.

5. From logistics centralities to logistics regimes: a framework for city logistics analysis

The comparison of logistics centralities discussed in [Section 4](#) suggests that metropolitan logistics transformations are structured not by isolated logistics spaces, but by recurring socio-spatial configurations that coexist, overlap and interact across metropolitan systems. To capture these recurring patterns, we propose a regime-based framework for interpreting logistics transition.

The five logistics regimes identified in this paper should not be understood as discrete, mutually exclusive or universally stable categories (see [Table 1](#)). Rather, they function as ideal-typical and heuristic configurations derived from a reflexive cross-reading of the empirical situations discussed above. Regimes are mobilized here to stabilize analytically recurrent combinations of infrastructures, labour systems, governance arrangements and organizational forms observed across metropolitan contexts. Their boundaries remain porous, historically contingent and unevenly institutionalized: several regimes may coexist within the same metropolitan area, overlap within the same logistics centrality or evolve through processes of hybridization, decline or recombination. The proposed framework therefore does not describe sequential stages of logistics modernization, nor a universal pathway of convergence, but rather offers a flexible analytical grid for interpreting differentiated metropolitan logistics trajectories.

Table 1. Five logistics regimes to characterise logistics cities in transition

Logistics regimes	Dominant actors	Main function	Trajectory	Labour organization	Real estate form / Spatial organisation	Current dynamics	Informality processing	Systemic role	Sustainability impacts	Characterisation in case studies
Standardised and Financialised Peri-urban Logistics Regime	Global logistics firms, 3PLs, developers, institutional investors	Mass storage, long-term warehousing, cost/time optimisation	Emergence (1950s–1980s), consolidation (1990s–2010s), current dominance	Formalized, subcontracted, specialized workforce	XL/XXL warehouses in peripheral areas, specialised logistics parks, high dependence on road infrastructure	Highly stable, strong spatial and financial inertia, high institutional visibility	Externalised informality (subcontracting, last-mile delivery)	Structuring regime: Sets norms, investments and temporalities	Optimises large-scale flows vs drives land consumption, and long-distance dependence	<i>Paris [dominant regime]; Casablanca [secondary regime]</i>
Intermediate Logistics Regime	Wholesalers, SMEs, distributors, local logistics operators	Interface between peri-urban and dense urban areas, buffer storage, specialisation	Industrial heritage (1950s–1980s), maintenance and recomposition	Hybrid workforce, family firms, local BtoB, subcontractors	Former warehouses, mixed-use areas (activity zones, urban fringes), high land inertia	Relative decline but high resilience	Limited but diffuse informality (precarious jobs, local arrangements)	Stabilises the system, absorbs spatial constraints, co-dependence with the dominant regime	Reduces redistribution distances, supports local economies vs faces congestion and fragmented structures	Paris [secondary regime]; Casablanca [secondary regime]
Urban Logistics Regime	Local or global logistics operators, urban logistics providers	Parcel delivery, technical innovations (cargo bikes, lockers), high operational intensity	Niche (1990s–2000s) → diffusion (2010s) → functional stabilisation (2020s)	Formal operators and subcontracted delivery workers	Micro-warehouses, urban hubs, ground-floor facilities, high land constraints	Sustained growth but economic and regulatory instability	Structural or gray informality (precarious work, hybrid statuses)	Enables the dominant regime in dense areas; key role in ecological transition	Low-emission delivery and proximity vs land-use conflicts, regulatory gaps and labour precarity	Paris [secondary regime]; Casablanca [niche regime]
Family-run or Artisanal Logistics Regime	Family firms, owner-drivers, micro-transporters	Neighborhood-level delivery, constrained markets, low capitalisation / standardisation	Historically structuring regime, progressive subalternisation	Family labour, self-employment, informal arrangements	Diffuse spaces: small warehouses, home storage, back shop, mixed uses	Persistent despite competition, high adaptability	Constitutive informality (self-employment, family networks)	Social and spatial buffer; ensures continuity of flows; informal cost regulation	Territorial embeddedness and resilience vs weak labour protection and uneven environmental performance	<i>Casablanca [dominant regime]; Paris [niche regime]</i>
Service-based Logistics Regime	Platforms, start-ups, cooperatives, gig workers	Proximity-based and fast delivery (food, groceries, small items)	Experimentation → selection → absorption, marginalisation or disappearance	Gig work, self-employment, high subcontracting dependence	Temporary, hybrid, mobile forms	Highly unstable, dependent on market trends and venture capital	Experimental or opportunistic informality	Potential for system recomposition but also fragmentation	Accessibility, responsiveness vs socio-spatial fragmentation	Paris [niche regime]; Casablanca [niche regime]

- (1) *The standardised and financialised peri-urban logistics regime* is a structuring regime for the logistics transition. It refers to a recurrent configuration suggested by the cases of Garonor, the Sénia-Thiais-Wissous corridor and, under different institutional conditions, Zenata. It is characterised by large warehouses on the outskirts of cities, financialised real estate, high performance standards and strong institutional visibility. However, the comparison also suggests that its functioning remains dependent on intermediate and proximity logistics systems for redistribution and dense urban delivery, making it structurally dominant but operationally interdependent. From a sustainability perspective, this regime may support logistics efficiency and large-scale flow optimization, yet it also raises concerns related to land consumption, dependence on long-distance redistribution systems and fragmented labour arrangements associated with subcontracting.
- (2) *The intermediate logistics regime* is a legacy system that is in relative decline but remains highly resilient. It emerges from the comparison of Aubervilliers, Rungis, Sidi Othmane Wholesale Market and Derb Omar, which point to persistent logistics configurations embedded within metropolitan fabrics. It can be identified by its old warehouses, which are usually found in dense or intermediate urban areas, that is in peri-central neighbourhoods (or suburbs), often on the outskirts of historic city centres. It is home to many SMEs, wholesalers, semi-wholesalers and the local B2B environment. It allows for buffer stocks and operational flexibility. It also acts as an interface between peri-urban logistics and dense cities, and it is potentially co-dependent on the standardised peri-urban logistics regime through subcontracting arrangements. Finally, it has little political recognition. The comparison suggests that, rather than disappearing through logistics suburbanization, this regime persists through repeated processes of relocation, adaptation and specialization. Its sustainability implications appear ambivalent: while inherited infrastructures, proximity to dense markets and operational flexibility may reduce redistribution distances and support local economic ecosystems, these spaces also face congestion pressures and vulnerabilities linked to fragmented business structures.
- (3) *The urban logistics regime* fuels contemporary narratives about innovative, efficient and clean last-mile logistics. It refers to the growing institutionalization of proximity-oriented logistics arrangements associated with dense urban delivery, observed in Paris through cargo-bike logistics, micro-hubs, parcel lockers, temporary logistics spaces and dark stores and increasingly echoed in more diffuse forms in Casablanca. This regime is primarily defined by the re-embedding of logistics infrastructures and redistribution functions within dense urban environments. It has evolved from a niche sector in the 1990s and 2000s to a more mature sector in the 2020s and is now making rapid, albeit more diffuse, inroads in the Global South. It is characterised by technical innovations, such as cargo bikes and automated lockers, as well as organisational innovations, such as pooling solutions, temporary hubs and dark stores. While it is functionally central, particularly from an ecological transition perspective, it is structurally dependent on other systems. Weak or non-existent local regulations mean it is a source of urban conflict.
- (4) *The family-run or artisanal logistics regime* is organised around small family businesses, self-employed workers and micro-transporters with limited capital and standardised equipment and procedures. It refers to recurrent organizational arrangements observed particularly in Casablanca, but also in more limited or residual forms in Northern contexts. Historically, it has been a structuring force. In cases such as Derb Omar, it appears closely intertwined with wholesale trade, neighbourhood commercial networks and localized redistribution functions, providing continuity and flexibility within metropolitan circulation systems.

Its presence remains prominent within numerous southern urban areas and has evolved into a more nuanced, albeit enduring, presence in the northern cities. It ensures the continuity of flows where dominant systems are inefficient or too costly. It thus acts as a social and spatial buffer and even as a regulator. In constrained segments, such as very precise deliveries, dense areas, flexible hours and markets with low solvency, it can compete with other systems. The comparison suggests a mixed sustainability profile, combining strong territorial embeddedness, service continuity and adaptive capacity in constrained markets with vulnerabilities associated with informality, weak labour protection and uneven environmental performance.

- (5) *The service-based logistics regime.* Unlike the urban logistics regime, which is structured around logistics infrastructures and spatial proximity, the service-based logistics regime is organized around platform-mediated business models providing on-demand delivery services. Observed through food delivery platforms, grocery delivery services and rapid small-goods distribution (Glovo, Deliveroo or Uber Eats), this regime relies on digital coordination, subcontracting and highly flexible labour arrangements. It is driven by a variety of stakeholders, including start-ups, platforms, cooperatives and self-employed entrepreneurs. The service is centred around fast, local delivery of items such as meals, groceries and small goods and is made possible by the use of small vehicles such as bicycles and scooters, and occasionally small commercial vehicles or cars. This system is highly unstable, as it is linked to developing markets that are dependent on subcontracting and socio-political contexts. The potential outcomes of this regime include full integration into an existing framework, a marginal role or complete dissolution. While this regime may improve accessibility and responsiveness through rapid localized delivery, it also raises sustainability concerns related to induced demand, labour precarity, fragmented employment relations and potentially inefficient delivery intensification.

In addition, it should be noted that an informal logistics sector exists that is neither a fully autonomous regime nor a simple niche, but a cross-cutting component intrinsic to transport and logistics activities worldwide. The comparison of logistics centralities suggests that hybrid forms of formalization traverse metropolitan logistics systems in both Paris and Casablanca, albeit with varying intensity and visibility. Peri-urban and intermediate logistics regimes tend to externalise informality rather than integrate it directly, unlike family-based or service-based logistics regimes. Consequently, the logistics transition is not intrinsically virtuous; it can also exacerbate precariousness, informalisation and the fragmentation of urban systems. Informality further complicates sustainability transitions, suggesting that logistics transformations may simultaneously generate operational flexibility and new forms of precariousness, regulatory opacity and socio-spatial fragmentation.

The regime-based typology developed in this paper provides a synthetic yet flexible framework for interpreting metropolitan logistics transition beyond the specific cases of Paris and Casablanca. In Paris, the logistics system is characterised by the dominance of a standardised, financialised peri-urban logistics regime, supported by mature planning instruments and dense real estate markets, while relying on the continued presence of intermediate logistics and an increasingly institutionalised urban logistics sub-regime. In Casablanca, by contrast, the dominant configuration combines a family-based and artisanal logistics regime with selective and state-led forms of logistics suburbanisation, while urban logistics remains weakly institutionalised and proximity logistics develops primarily through platform-based and hybrid arrangements.

The proposed typology operates as a heuristic grid for reading logistics transformations in metropolitan areas, independently of the geographical context. It allows trajectories to be interpreted without assuming convergence toward a single “advanced” logistics model, and without transposing policy frameworks or planning instruments forged in one context onto

another. By mobilising the multi-level perspective as a flexible heuristic rather than a prescriptive model, this paper contributes to its urbanisation and politicisation, emphasising spatial unevenness, labour relations and governance asymmetries. In doing so, it aligns with postcolonial and comparative urban scholarship by treating logistics not as a neutral technical function, but as a lens through which metropolitan transformations, power relations and historical legacies can be critically examined. The regime approach thus opens up a decolonial reading of city logistics, attentive to coexistence, persistence and recombination, rather than to linear narratives of modernisation.

6. Discussion and conclusions: towards sustainable city logistics

By comparing Paris and Casablanca, despite their asymmetric positions in terms of institutionalisation, data availability and planning policies and considering them alongside other well-known case studies, we can analyse the co-evolution of different logistics regimes. In each city, one regime dominates while others coexist, or even compete, in certain logistics sectors.

In this context, a logistics transition occurs when existing configurations are recombined through the growing interaction, overlap or competition between regimes, reshaping metropolitan circulation systems without necessarily replacing previous arrangements. Rather than implying linear substitution or convergence, logistics transition emerges through processes of coexistence, hybridization and uneven institutionalization across metropolitan contexts. This drives a reorganisation of the previous system. This is clearly what is happening in Paris and Casablanca. Paris can be characterised as a Fordist logistics city, dominated by large warehouses. However, it is facing the emergence of a niche service sector that corresponds with the platform economy and leaves increasing room for deregulated, and even illegal, working practices. As for Casablanca, which we can describe as an emerging logistics city, is dominated by a family-run logistics regime comprising small businesses and a multitude of 'little hands' operating mainly in the weakly regulated or even completely informal service sector. There, we can observe the emergence of a niche regime: the large warehouse economy, fuelled by the selective suburbanisation of logistics.

Thus, comparing the dynamics of logistics spatialisation in the metropolitan areas of Paris and Casablanca yields several key findings that help to define logistics cities worldwide. This includes dynamics observed in emerging Southern contexts, which are rarely considered in logistics studies. One of the main contributions of the regime approach is to highlight the persistence of intermediate logistics configurations, exemplified by Aubervilliers, Rungis, Sidi Othmane Wholesale Market and Derb Omar. Often overlooked in narratives opposing large suburban logistics infrastructures to innovative last-mile delivery systems, these spaces continue to perform essential redistribution, storage and coordination functions. Their persistence suggests that the metropolitan logistics transition is not solely driven by technological innovation or logistics sprawl, but also by the adaptation and reconfiguration of inherited logistics environments. The comparison further suggests that these intermediate spaces constitute a critical yet often overlooked layer of metropolitan logistics systems. By connecting large-scale logistics infrastructures to dense urban markets, they perform redistribution, storage and coordination functions that remain difficult to replicate through either peri-urban logistics platforms or emerging last-mile systems alone.

Firstly, it is important to recognise the limitations of peri-urban logistics. Despite its widespread nature, this phenomenon is not straightforward and faces resistance. Secondly, a differentiated market exists between centres that were formerly structured around logistics activities and their peripheries. This market will attract globalised players and major state projects. This confirms a dualisation of practices (Mareï and Savy, 2021) and logistics markets (Heitz, 2021). Thirdly, weakly regulated, and in some cases informal, production systems play a significant role, particularly in relation to constrained and costly last-mile delivery. Fourthly,

the planning process remains highly differentiated, with logistics issues being reappropriated at all levels of public action in the Global North. By contrast, planning in the Global South tends to be confined to the national level, if it exists at all (Mareï, 2023). The logistics city is characterised by the coexistence of logistics activities in dense centres, intermediate areas and peripheries. This forms a system of interdependent regimes ranging from peri-urban logistics to the fragmented and informal practices mainly found in the heart of large metropolises.

By situating urban logistics within socio-technical transition studies, comparative urbanism and postcolonial urban studies, we intend to broaden the scope of urban transport and logistics studies, moving beyond the prevalent North/South dichotomy in this field. The concept of logistics transition, as manifested in logistics regimes, shows that practices and spaces are not converging globally but evolving through the coexistence, recombination or competition of regimes. This co-evolution, marked by the reversibility of trajectories (Unruh, 2000), underscores that transition is not convergence. Sustainability emerges as a central dimension in this process, as the performance of logistics systems – through innovation, adaptability and resilience – raises differentiated sustainability implications. Thus, transition reflects the interdependence of diverse regimes, whose trajectories are context-dependent and shaped by both historical legacies and contemporary challenges. The coexistence of dominant and niche regimes highlights the irreversibility of certain trajectories while also allowing for reversible shifts, as new practices emerge and reshape urban logistics landscapes (Geels, 2002; Rip and Kemp, 1998). The regime approach suggests that sustainability cannot be reduced to technological modernization or logistics efficiency. Each regime combines distinct environmental, social and economic trade-offs. From this perspective, logistics sustainability appears less as a linear transition toward an optimal system than as a negotiated recombination of heterogeneous socio-spatial arrangements.

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