



Connecting City Logistics Ecosystems and Urban Ecosystems: An Ethnographic Perspective on Logistics Service Providers

Full paper

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Abstract

Rooted in ethnographic research on city logistics, our paper delves into how Logistics Service Providers (LSPs) can adeptly navigate the intricate landscape of both city logistics and urban ecosystems' strategies. We begin by repositioning LSPs not merely as subcontractors within the city logistics ecosystem but as indispensable members of urban ecosystems' communities. Drawing on ethnographic data, we illustrate how LSPs effectively navigate the complexities of two conflicting ecosystem strategies. On the societal front, it sheds light on city logistics not just from a business standpoint but as a social service that enhances the well-being of cities. Theoretically, we deepen our understanding of both the city logistics concept, recognizing it as a system intricately connected to its environment, and of LSPs, whose traditional 'subcontractor' narrative transforms into a more comprehensive one, centered on purpose. Ultimately, our research encourages future projects aimed at exploring how city logistics actors function as integral members of urban communities.

Keywords: City Logistics; Logistics Service Providers; Urban Ecosystems; City Logistics Ecosystems;

Introduction

Despite ongoing concerns about sustainability, freight transport continues to pose significant challenges in terms of economic, social, and environmental impact (Hesse, 1995; Wieland, 2021; Dablanc, 2022). A recent study conducted by CILOG, the French interministerial logistics committee, shows that urban freight transport contributes significantly to urban pollution, accounting for between 10% and 20% of traffic and a substantial portion of emissions, including a quarter of carbon dioxide, a third of nitrogen oxide, and half of fine particulate matter from urban traffic (CILOG, 2022). More alarmingly, urban freight transport's greenhouse gas emissions have the most detrimental impact on the health of local residents (Coulombel et al., 2018; Dablanc, 2022). However, proposed solutions often concentrate on reducing the environmental impact of transport activities but overlook the societal and financial challenges associated with the green transformation of city logistics (Strale, 2019; Dablanc, 2022). Consequently, urban transport activities, which are predominantly undertaken by logistics service providers (LSPs) (Fulconis and Roveillo, 2017), struggle to achieve this transformation.

Sustainable city logistics is an approach aimed at enhancing the environmental, social, and financial aspects of freight transport actors in urban areas. It addresses issues like traffic congestion, road user safety, and environmental footprint while adhering to market economy principles and ensuring free competition (Behrends et al., 2008; Chanut and Paché, 2013; Taniguchi, 2015). While logistics research focuses on improving transport performance through cost and resource management and control (Wieland, 2021), sustainable logistics is frequently explored from an instrumental stakeholder-based perspective (Montabon et al., 2016). This approach tends to highlight a positive connection between sustainability and performance (Pagell and Wu, 2009; Montabon et al., 2016). This raises a critical dilemma: If there is a strong connection between sustainability and performance, why has city logistics not yet achieved comprehensive sustainability? Addressing this problem appears to require a more comprehensive approach to sustainable city logistics (Dablanc, 2022) by recognizing logistics activities as intertwined with their environment and not just as independent systems (Wieland, 2021). The instrumental stakeholder-based approach fosters opportunistic behaviors, which hinder the crucial systemic changes needed for the sustainable transformation of city logistics (Montabon et al., 2016; Lagorio et al., 2017; Touboulic et al., 2020).

In line with Lagorio et al., (2017), we state that city logistics can be described as a business ecosystem, that is, a network of interconnected actors working to deliver goods into urban areas and create value for each other. However, we suggest expanding this definition to tackle one of the main strategic city logistics' problem (Touboulic et al., 2020; Wieland, 2021). From an ecological perspective, cities can be characterized as natural ecosystems (Newcombe et al., 1978; Parlange, 1998; Golubiewski, 2012). They have actors whose combined actions influence both other actors and their environments. LSPs contribute to the flow of inputs and outputs within urban ecosystems (Golubiewski, 2012), thus forming part of this community as well. To the best of our knowledge, little research has explored city logistics as a system connected to urban ecosystems. Existing studies primarily describe the ecosystemic structure of urban transport activities, focusing on their organizational aspects (Lagorio et al., 2017; Zenezini et al., 2018; Przybylska et al., 2023). However, the interactions between city logistics ecosystems within their broader environment – urban ecosystems – have been largely overlooked. We contend that a deeper examination of these interactions would enhance our understanding of the environmental, financial, and social sustainability challenges in city logistics.

The close relationship between city logistics ecosystems and urban ecosystems is exemplified by the LSPs, which are responsible for distributing merchandise to urban recipients. These providers serve as the primary point of intersection between the two ecosystems and are recognized for having the potential to bridge the gap between these communities (Chanut et al., 2012). The need to maintain their roles in both ecosystems and align with their respective strategies is an important subject of study. In this article, we argue that studying how LSPs reconcile the strategies of the two types of ecosystems they belong to can uncover valuable insights into harmonizing logistics profitability with the imperatives of sustainable development. Therefore, we propose to investigate the following question: *How can LSPs contribute to the sustainable transformation of city logistics while operating within two ecosystems with potentially conflicting interests?*

To gain a deeper understanding of sustainable city logistics from the perspective of LSPs, we employed an ethnographic research protocol (Hammersley, 1992; Beaud and Weber, 2010). While previous city logistics studies have primarily used quantitative methodologies (Strale, 2019; Hardy et al., 2020), an ethnographic approach offers an innovative perspective (Wieland et al., 2024). By analyzing extensive data collected through in-depth fieldwork involving over 40 diverse actors in city logistics over 18

months, this approach allowed us to explore the relationship dynamics among actors in their everyday contexts (Beaud and Weber, 2010). By examining the interactions between LSPs and other stakeholders from both ecosystems, we shed light on the challenges LSPs face in harmonizing diverging strategies from multiple viewpoints.

Our unique data and our innovative research protocol have led to significant contributions to the city logistics literature. Firstly, unlike most studies that focus on a single group, we provide comparative insights between LSPs and other stakeholders. Secondly, we offer a dynamic perspective on the interactions between city logistics ecosystems and urban ecosystems. Moving beyond the traditional subcontractor narrative, we depict LSPs as dynamic actors whose engagement in two divergent yet highly interconnected ecosystems enables them to promote their financial, social, and environmental sustainability. Finally, drawing on ecosystem theories, we introduce a novel approach that enhances understanding of sustainability challenges within city logistics. We present the activities of city logistics in interaction with another ecosystem, which diverges significantly from the traditional stakeholder-based and firm-centric perspectives in the literature.

Literature review

Research on Supply Chain Management frequently takes an instrumental perspective (Montabon et al., 2016). It focuses on narrating tales of optimization and performance enhancement, demonstrating how best practices can lead to both financial and operational success for logistics actors (Touboulic et al., 2020; Wieland, 2021). Yet, as sudden changes in the environment become more frequent, supply chains become less resilient (Wieland, 2021). Additionally, despite longstanding research on environmental sustainability (Low and Gleeson, 2003; Dablanc, 2022) demonstrating a positive relationship between environmental initiatives and performance (Montabon et al., 2016; Strale, 2019), logistics has never been more disconnected from its environmental context (Touboulic et al., 2020; Wieland, 2021). City logistics is indeed no exception, as it accounts for more than half of the fine particles emitted in urban areas, while representing only a quarter of the distance covered by motorized vehicles (Dablanc, 2022). Consequently, urban logistics activities not only negatively impact the global environment but also society, as health issues among urban residents can be directly correlated to these nuisances (Coulombel et al., 2018). The emergence of the platform

economy has also accelerated city logistics' social sustainability issues. This model takes advantage of vulnerable urban populations (Aguilera et al., 2018; Huang, 2022) and represents most jobs created in French “underprivileged” neighborhoods (Sacher, 2022), contributing to the widening social divide within urban ecosystems. Quite surprisingly, these concerns are rarely discussed by city logistics researchers, who prioritize optimization-oriented topics, such as urban infrastructure, green vehicles, or the viability of alternative delivery solutions like crowd-logistics or cyclo-logistics (Strale, 2019).

These issues stem from the understanding of city logistics as “the process for totally optimizing the logistics and transport activities” (Taniguchi, 2015: 50), advocating for an improvement in the performance of urban logistics activities. There is an alternative to the instrumental perspective on city logistics. Rather than being viewed solely as a process or a sub-part of global supply chains, urban logistics is also understood as a phenomenon inherent to cities. It has always been at the core of cities (Newcombe et al., 1978). The concept of city logistics was relatively recently coined—considering that urban logistics activities have been in existence for millennia—to address the lack of alignment between logistics activities and urban areas (Taniguchi, 2001). As concerns about the environmental sustainability of urban areas grow, there is a need to gain a deeper understanding of how logistics is conducted within cities and how it can evolve not only to align with sustainability objectives but also to enhance efficiency (Taniguchi, 1999; Low and Gleeson, 2003; Taniguchi, 2015). As a result, researchers have focused on comprehending how logistics actors should engage with city stakeholders to generate value (Taniguchi et al., 2015; Marciani et al., 2016; Przybylska et al., 2023). However, this perspective on city logistics also contributes to disconnecting it from its primary environment—the city. Indeed, understanding how logistics actors interact with the members of urban communities also signifies that logistics actors are acknowledged to be outsiders of these communities, when, in reality, they are not (Golubiewski, 2012). From this standpoint, it seems that researchers have overlooked the initial understanding of what logistics truly was: an essential component of urban ecosystems (Newcombe et al., 1978).

The most common approaches to the concept of city logistics are a testament to how supply chains were gradually detached from their environment. Research focuses on improving efficiency by controlling costs and maximizing profit (Strale, 2019; Wieland, 2021). Still, the primary purpose of logistics within urban areas is neither to be profitable nor efficient – not that neither of these is important. It is to facilitate the inflow and

outflow of goods to and from cities, thus being integral parts of the “urban metabolism” (Newcombe et al., 1978:3). In doing so, logistics contributes to the development of cities, enhancing the overall quality of life for their residents and enabling essential activities such as the supply of food or medicine (Golubiewski, 2012). Since cities are natural ecosystems (Parlange, 1998; Golubiewski et al., 2012), these flows naturally adapt to meet the needs of the cities. Therefore, there is little need for optimizing logistics for its urban environment, as the urban environment inherently optimizes logistics to cater to its requirements (Golubiewski, 2012). From this standpoint, there doesn't seem to be a crucial need for comprehending how city logistics activities should be adjusted to urban constraints, as their natural state is to be aligned with these constraints. If they are not anymore, then we must strive to understand “*why?*” instead of “*how to?*”.

Goods circulating within cities flow between shippers mostly located outside urban areas and receivers situated within urban areas. The actual transportation of goods is carried out by Logistics Service Providers (LSP), which are predominantly composed of small and medium-sized companies operating at a local scale (Fulconis and Roveillo, 2017). In reality, it is not the LSPs themselves that transport the goods, but rather the drivers who work for these LSPs, whether as employees or independent drivers. The primary responsibility of these drivers is to transport goods from either shippers' or LSPs' warehouses to urban receivers, thereby fulfilling the objectives of both shippers and LSPs. To accomplish this, these drivers must adhere to the regulations and constraints of the urban ecosystem. Urban logistics actors, especially drivers have largely been overlooked and “under-respected” by researchers in city logistics, as they are mostly seen as key resources upon which shippers rely, rather than recognized as genuine constituents of either city logistics or urban ecosystems (Ozment and Keller, 1999; Williams and George, 2014:1). Still, these actors are integral to the alignment of city logistics with urban ecosystems. There have been longstanding concerns about the drivers' working conditions. Despite growing attention, the issue with retaining drivers and enhancing the profession's attractiveness is still a reality (Ozment and Keller, 1999; Gaumet, 2022; Sacher, 2022).

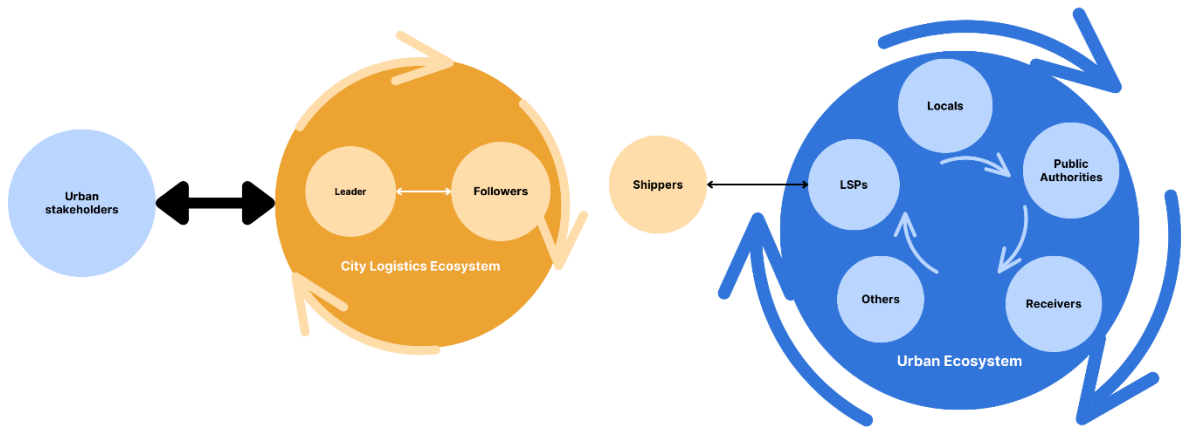


Figure 1. The City Logistics Ecosystem Perspective (left) Versus The Urban Ecosystem Perspective (right)

Thus, despite a longstanding tradition of research in city logistics, we don't know much about its role in urban ecosystems. Research that does explore the interaction between city logistics and urban stakeholders operates under the hypothesis that city logistics actors do not belong to urban communities. Therefore, it also concentrates on understanding and optimizing these interactions. I argue that city logistics actors belong to urban ecosystems as much as they belong to city logistics ecosystems. Additionally, their interactions with other urban ecosystem communities, as well as with the ecosystem itself, should not be "optimized," as they are guided by the needs of the natural ecosystem. As urban logistics actors have long been recognized for constituting the urban metabolism—carrying the nutrients crucial for the development of cities and the well-being of their communities (Newcombe et al., 1978), I believe that gaining a better understanding of their interactions within urban ecosystems would provide valuable insight into the concept of city logistics.

Data collection and analysis

The study of logistics often employs quantitative methodologies (Strale, 2019). However, ethnography, with its ability to provide contextual data from within and analyze connections between actors, offers innovative perspectives and valuable insights into city logistics research (Wieland et al., 2024). To explore LSPs' contributions to the sustainable transformation of city logistics, we adopted an ethnographic approach to capture a variety of perspectives "from below" (Beaud and Weber, 2010:70). Ethnography involves the study of interconnected respondents within a context,

emphasizing the links and exchanges between different actors. Our interpretivist epistemological stance treats lived experience or “life experience” as knowable (Husserl, 1970), asserting that a subject’s understanding of a situation is inherently connected to both the situation itself and the subject experiencing it. Our objective is to describe and understand the events within a specific context, offering a comprehensive analysis of each actor’s perception of reality (Hammersley, 1992; Avenier and Thomas, 2015).

The purpose of our study is to comprehend how the context influences the LSPs’ roles within the city logistics network and how they adapt to thrive in both their professional network and their environment, particularly the urban ecosystem. From March 2022 to September 2023, we conducted various data collection sessions, including participant observation, interviews, meetings, and workshops with multiple city logistics actors. The participating LSPs were primarily small and medium-sized companies, with workforces ranging from 5 to 500 employees, including company leaders, fleet managers, and truck drivers. These companies were deeply integrated into their local ecosystems, operating at regional, county, or district levels, primarily in the Bordeaux region of southwest France, a historically significant customer base for IAF, our collaborating company. This region, a densely populated urban area, is highly relevant to studying sustainable city logistics, especially given the 40% growth in transportation flows and resultant pollution over the past decade (Dablanc, 2022). We established contact with these actors through their partnership with the French truck bodybuilder “IAF,” enabling initial access to a sample of LSPs with longstanding business relationships with IAF. Furthermore, the trust-based relationship between the LSPs and IAF, especially with the sales representative overseeing their ongoing support, facilitated informal exchanges and granted us full access to the structures that were central to our research, including warehouses, trucks, and employees. Figure 1 illustrates our data collection and analysis process over this period, as explained in the following text.

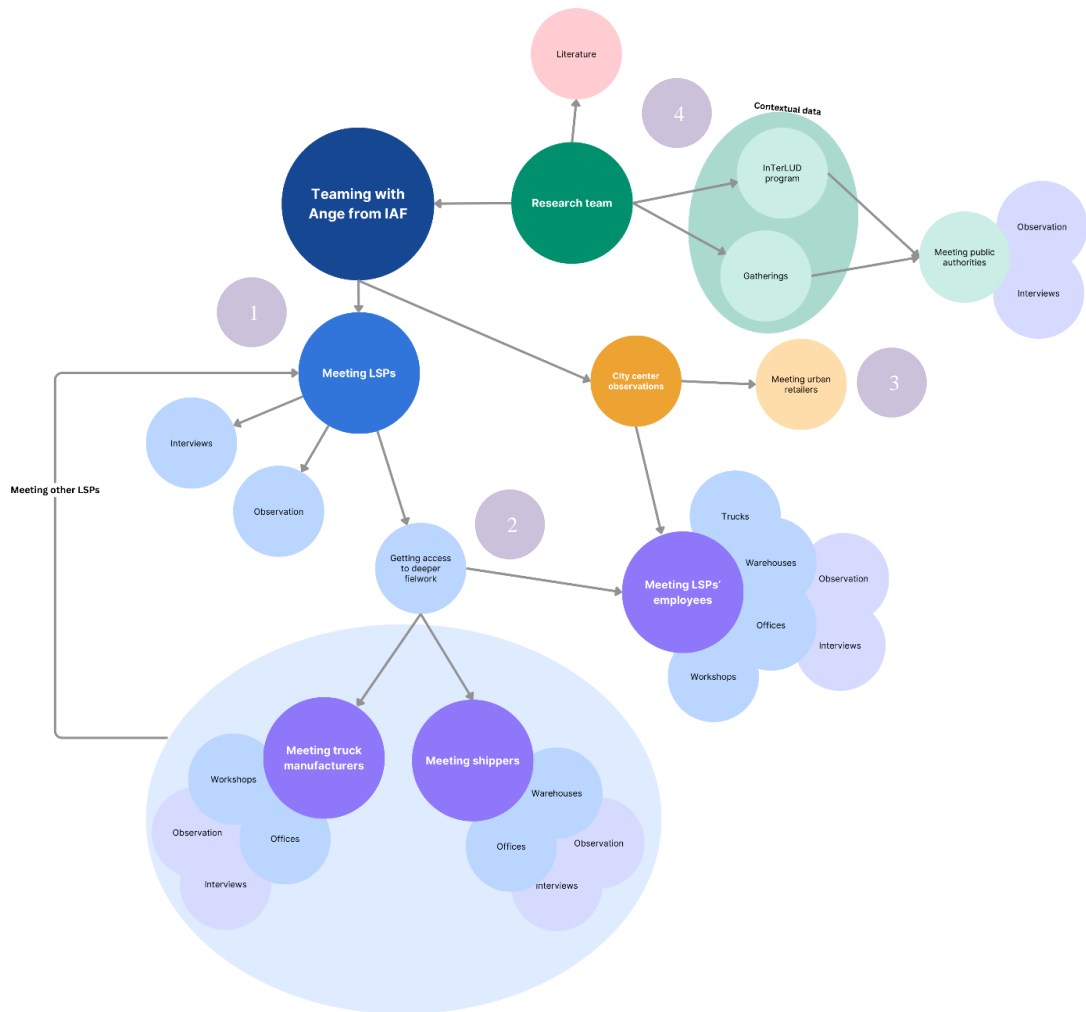


Figure 2. The story of our fieldwork

We collaborated with “Ange,” IAF’s sales representative responsible for the city logistics product range (1). We approached LSPs with the objective of “gaining a deeper understanding of the challenges associated with urban delivery and designing solutions tailored to their needs.” This business-oriented approach allowed us to engage in discussions with company leaders in both formal settings, like customer meetings at their offices, and more informal contexts, such as lunch outings at restaurants. Our interactions with LSPs usually lasted two to three hours and systematically centered around four main themes: the urban delivery challenges they faced, the prospects for LSP businesses, their relationships with partners, and their views on the environmental and social challenges of city logistics. The informal nature of these discussions, along with Ange’s friendly rapport with the company leaders, fostered open and honest conversations, which were crucial to our study’s success. Furthermore, these meetings laid the groundwork for in-depth fieldwork within the LSPs’ premises (2). This enabled us to interact with various employees, including fleet managers, dispatchers, team leaders, drivers, and handlers, in

their work environments (e.g., warehouses, workshops, and offices) and during deliveries. Observing their work routines also gave us a unique opportunity to witness interactions among different actors, including customers, drivers, handlers, team leaders, and dispatchers.

We complemented this dataset with extensive observation phases conducted over 14 mornings, from 7 a.m. to 11 a.m. (3). This time frame was identified by LSPs as the most conducive for observing urban freight transport and witnessing interactions between urban receivers and drivers. These observations took place in the urban centers of Bordeaux, Toulouse, and Paris, specifically in areas previously designated as “critical” due to high commercial density and urban challenges like narrow streets, traffic congestion, and accessibility issues. These settings were ideal for studying the work of delivery drivers. During these observations, we consistently had an opportunity to engage in discussions with both drivers and receivers about their work. To facilitate these interactions and initiate conversations, Ange first approached them as a “bodybuilder seeking to understand the constraints of city logistics.” The research team then took over the discussions to further explore the observations made earlier. Besides urban observations, we enriched our research by visiting cyclo-logistics warehouses in Toulouse and Bordeaux. These warehouses, strategically located in the heart of city centers, allowed us to observe and engage in discussions with cycle drivers, thereby gaining insights into the nature of their work, their working conditions, motivations, and how they complement more “traditional” logistics methods by using trucks.

As we collected data, it became essential to provide context for several of our observations (4). To this end, we took advantage of the deployment of InTerLUD, a public program aimed at facilitating collaboration between local authorities and private entities in the realm of sustainable city logistics (Lasserre and Elie, 2021). InTerLUD’s initiatives in support of sustainable city logistics span nearly 60 metropolitan areas across France and offer a valuable opportunity to compare our data with the program’s insights across various contexts. This approach ensured the intelligibility and transferability of our research (Hlady-Rispal and Jouison-Laffitte, 2014; Miles et al., 2014).

Table 1 summarizes the locations and sites central to our research (Appendix 1).

Throughout our investigation, we recorded all observed subjects in a logbook. We also took many photographs and several videos to document our observations. Ethnographic data analysis is an ongoing process throughout the investigation, continually enriched by revisits to the field (Lalonde, 2015). To enhance our

understanding, we frequently compared data collected from different sources to identify differences or similarities and to enrich our observations (Miles et al., 2014; Lalonde, 2015). More broadly, the data analysis involved a constant re-examination of our logbooks. As the study progressed, we created figures to summarize our data into major analytical axes and highlight surprising findings. These figures were then presented to our respondents and compared with existing literature to refine the next phase of fieldwork. This iterative process between research literature and local field observations led to the creation of new figures. We repeated this process until we reached theoretical saturation, which is characteristic of ethnographic research (Beaud and Weber, 2010; Miles et al., 2014; Becker, 2020). This method was also effective in identifying verbatims. In the results section, we present two figures (Figure 2 and Figure 3) developed during the final phase of our analysis. They allow for a better understanding of the LSPs' role in aligning ecosystem strategies. To accurately convey our findings, many "native words" (i.e., raw verbatims) were transcribed, which offer deeper insight into the social context of the research and where "the 'tone' indicates with great precision the meaning of what is being said" (Beaud and Weber, 2010: 231).

Results

A tale of LSPs dealing with city logistics ecosystems and profit maximization

LSPs no longer feel welcome in the urban ecosystem community. As one LSP expressed, "*Transport pollutes cities, so everyone targets us.*" By "*everyone,*" they referred to several categories of urban inhabitants: Residents "*are fed up with seeing their neighborhoods blocked by delivery vans,*" receivers "*make no effort to facilitate our work,*" and urban authorities "*make delivery work increasingly difficult.*" Indeed, accessing city centers has become more challenging in recent years, with prospects appearing grim: "*I heard they were even thinking about charging us to enter the city*" [LSP]. Even though LSPs consider adaptability as a key component of their job, they find the shift toward environmental sustainability particularly challenging.

"I don't know where [the company] will be in five years; at least I won't be around to see it." [LSP]

This transformation is particularly challenging because LSPs lack support from business partners. Shippers appear indifferent to those challenges: "*They don't care if there are traffic bans or restrictions; they just want the delivery to be on time*" [LSP]. From this

perspective, LSPs have no choice but to meet their *leaders'* demands, often at the expense of complying with urban regulations.

Cities and logistics ecosystems: LSPs between a rock and a hard place

In city logistics, LSPs serve as intermediaries between city logistics ecosystem *leaders* and their clients – the receivers in urban areas. They recognize their crucial role as mediators between “*two different types of customers*” [LSP] yet feel unsupported by their business partners in adapting their activities to align with public authorities' expectations in social and environmental sustainability. For example, “*the municipality is pushing for the mutualization of flows, but our customers [shippers] won't allow us to pool their data to make grouped deliveries*” [LSP specialized in cyclo-logistics]. By contrast, their business partners are interested in more eco-friendly deliveries for their image but are reluctant to bear the costs and constraints of transitioning to electric vehicles due to a lack of financial incentive: “*We use our electric truck as a showcase; some customers [shippers] like it, but it costs more and is more restrictive to use, so it's not profitable at all*” [LSP]. As a result, LSPs find themselves having to make efforts on their own. LSPs describe this situation as being “*between a rock and a hard place.*” The race for profit maximization within city logistics ecosystems also creates challenges for drivers, which are a critical asset for LSPs due to their skills and experience. LSPs feel pressured by truck manufacturers whose solutions lead to value destruction, as they have to “*organize their routes according to the recharging network and not just according to the customers*” [manufacturer]. This situation results in “*relying even more on drivers, whom we're already unable to retain*” [LSP]. To mitigate this issue, public actors “*need to consider the progress made by manufacturers to define a realistic timetable*” [LSP].

The need for LSPs to rapidly update their fleet with greener vehicles to comply with urban ecosystems' rules is a strong constraint, as it does not align with their profit-maximization objectives in city logistics ecosystems. Moreover, while public authorities push toward mutualization and encourage LSPs to reduce the number of vehicles used for deliveries, city logistics ecosystem *leaders* tend to increase their control over LSPs to ensure they do not prioritize other shippers:

“Shippers don't want us to mutualize flows. First of all, there's the problem of competition: They're afraid other shippers will get their data. And then there are

practical problems, such as: In the event of a delivery problem, how can I be confident that my merchandise is being delivered rather than someone else's?" [LSP]

Consequently, shippers tend to increase their control over LSPs' activities: *"I now only manage the drivers, which is the most difficult aspect. Besides, they are not crazy; they charge me for training drivers to use their own tools" [LSP].*

The mounting pressure to change practices into more socially and environmentally sustainable ones, combined with the lack of support from city logistics ecosystem leaders, exacerbates the LSPs' financial and social issues. Ultimately, this situation hinders their ability to align with the public authorities' strategic decisions.

Where tensions hit the hardest: drivers weathering the storm

Shippers are not necessarily required to comply with urban ecosystems' rules, as *"they don't belong to the metropolis per se, so they don't feel concerned" [urban logistics project manager].* This misalignment between shippers' requirements and the rules within Urban Ecosystems exacerbates the challenges LSPs face in terms of financial and social sustainability. These challenges become particularly evident in the drivers' daily routines. On the one hand, the intensity of their work increases due to the competitive nature of city logistics ecosystems. On the other hand, their working conditions deteriorate due to increased regulation by public authorities over city logistics activities, such as routing or vehicle types. In this context, LSPs struggle to maintain good working conditions for drivers, leading to high turnover rates: *"In three years, with an average of 20 trucks on the road for [a large shipping company], I've hired 250 delivery drivers,"* one LSP revealed. *"Even my son doesn't want to work for the company, and I understand him."*

Drivers face a negative perception of their activity: Local residents *"treat us like as an obstacle" [driver]*, while retail outlets *"are not even equipped to help us unload" [driver]*, and urban authorities *"set up 'bullshit' traffic rules" [driver]*. Ultimately, drivers feel more like parasites than useful workers: *"Drivers no longer find meaning in their work; they no longer work to help people, since they feel they're in everyone's way" [LSP].* The LSPs are concerned that the future will demand even more from drivers, who will soon have to adapt to the *"rhythm of the recharging stations."* Their sense of work is also affected by *"mind-numbing"* and sometimes *"counter-productive"* organizational tools and itinerary follow-ups: *"They [shippers] organize all our rounds, and it's demoralizing when we know our job is precisely to know our itineraries well and to adapt*

to the hazards of daily life” [driver]. The difficulty in retaining drivers in city logistics activities, and the broader challenge of attracting talent, stems partly from the challenges of the job itself, which has become harder in the past few years, as a driver notes:

“ - It’s becoming more and more complicated... firstly because traffic in the city has become unbearable, we have access to fewer and fewer places, we’re more and more controlled, and congestion is getting worse. The pace is also getting harder... They hired me for the Christmas period, because there was supposedly an increase in activity, and I was doing around 115 drop-off points a day. Now, in July, I’ve got 130! I think by September, I’ll be off doing something else.”

This testimony highlights the conflict of interest between the ecosystems. On the one hand, the Urban Ecosystem strives for logistics service providers to comply with its regulations by enforcing fleet renewal and restricting access to the inner city. On the other hand, the city logistics ecosystem aims to boost productivity by increasing daily delivery points. Drivers are required to complete deliveries at a faster pace as the number of delivery points rises. Their workday, typically limited to approximately 8 hours, including lunch, remains constant, as does the number of drivers, since LSPs might not have sufficient financial capacity to hire new employees. In our case, they are not compensated based on delivery point numbers but on adherence to routing, delivery times, and customer satisfaction. Drivers experience more issues as the frequency of deliveries increases: “We realized that the number of accidents increased with the number of delivery points” [dispatcher]. They also pollute more: “We’re checked on our eco-driving by an app that gives us a grade at the end of the day. You have to accelerate gently and shift gears at low revs... But it’s impossible to get a good grade; you can’t drive gently if you want to finish your day in your working time. As a result, you’re bound to pollute more. What I do is not start the application right away. I wait for my dispatcher to remind me, or for my round to be well underway, so I’m less likely to lose points” [driver].

In Figure 1, we illustrate how LSPs’ position at the forefront of the conflict between both ecosystems hinders their financial, social, and environmental sustainability. The city logistics ecosystem *leader’s* strategy requires them to maximize profit (1), while the urban ecosystem urges compliance with its social and environmental objectives (2). As these diverging strategies appear incompatible (3), LSPs struggle to maintain a sufficient level of financial, social, and environmental sustainability to survive (4). Consequently, they risk exclusion from both ecosystems, by being replaced by either

more efficient followers (city logistics ecosystem) or greener actors (urban ecosystem). In either scenario, the broader sustainable transformation of city logistics is impeded.

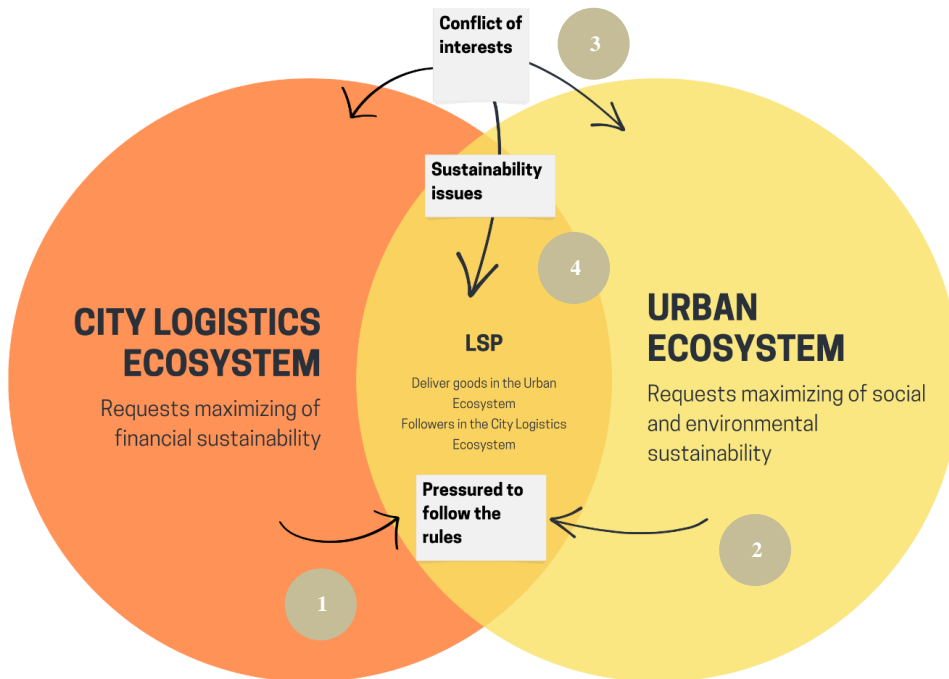


Figure 3. When ecosystems collide, LSP bear the consequences

A tale of LSPs, urban ecosystems, and strategy alignment

LSPs generate value by increasing involvement in urban ecosystems

Public authorities need to ensure that logistics activities contribute to the development of urban ecosystems, rather than just focusing on the profit-maximization strategies of city logistics ecosystem *leaders*. To this end, they must collaborate with LSPs to develop sustainable city logistics frameworks where “*what counts is the players, sustainability, and business model, but the first strategic objective is the players. It’s the collaboration among the players that will make it work*” [sustainable city logistics project manager]. In this context, LSPs can derive benefits from their involvement in the urban ecosystem by gaining support from public authorities for collaborative initiatives, thus creating value beyond their business ecosystems: “*I’m working with the city council on a project for a collaborative logistics hub. The idea is to pool our shippers’ goods in a depot and coordinate deliveries with our colleagues, thereby reducing costs by sharing our routes*” [LSP]. Public authorities must involve LSPs in these projects, ensuring the initiatives align well with LSPs’ financial constraints: “*There have been many similar initiatives [mutualization] before, which often failed because the cities didn’t consider the business*

model. If you don't think about how the players are going to make money from the outset, it can't work. A model can't operate on subsidies alone. That's why we need to develop the model with them [LSPs]" [sustainable city logistics project manager].

The idea of collaboration is driven by public authorities' recognition of their limited expertise in logistics and the need for efficient logistics for urban ecosystems to thrive. They acknowledge past mistakes, noting, *"We made a mistake by banning heavy trucks from city centers... It resulted in more congestion, as heavy trucks were replaced by several light vehicles" [sustainable city logistics project manager].* These mistakes often arise from an elected official's reaction to complaints from their constituents: *"Elected representatives, this is one of the most complicated issues. For example, we've banned vehicles over 19 tons from entering the town center. That's because a lawyer complained about seeing too many trucks outside his office, so the elected representative asked for a truck ban. We need to rethink these rules together with the transporters" [sustainable city logistics project manager].*

However, it is important to acknowledge that LSPs have also made their share of mistakes, as their historical role as 'henchmen' prevented them from seeing their activity as a means to add value to urban ecosystems. An LSP suggests a shift in perspective: *"We're part of the city. Of course, we rely on our customers [shippers], but it's also normal for us to engage with the municipality to make progress in this area [city logistics]. This is also how we'll find ways to pool resources."* Both LSPs and public authorities see the benefit of working together to redefine city logistics. LSPs view it as an opportunity to improve their financial and social sustainability by influencing the context of their work. Public authorities see it as a way to ensure logistics activities are more aligned with the urban ecosystem's regulations. They both agree that *"the term 'city logistics' doesn't mean a thing. First of all, there isn't just one type of logistics. Plus, city logistics players are diverse, and involved in logistics chains extending beyond the city. In fact, most of our urban logistics warehouses are actually for extra-urban logistics. From what I recall, only about 30% of local flows are really for city supply. Everything else is just passing through. So, we need to work on prioritizing these flows" [sustainable city logistics project manager]*

Are city logistics ecosystem leaders truly independent from urban ecosystems?

City logistics ecosystem *leaders* are more inclined to retain LSPs as *followers* when these LSPs engage more with their urban ecosystem. As noted during a discussion

between a shipper and an LSP, greater engagement of LSPs in the urban community enhances their customer follow-up and ability to handle daily uncertainties. For shippers, it is a matter of reducing costs, which increases their own profit: *“Before price, the main reason for selecting an LSP is service quality. Our main objective is to satisfy our customers [receivers]. So, we closely monitor our business partners’ ability to manage cargo or deliver on time. It’s our main performance indicator” [shipper]*. Shippers also pay close attention to their *followers’* financial sustainability: *“When we have good subcontractors, we make sure they’re in good financial health and conduct annual reviews, and we offer advice to them when they’re in difficulty. We do all we can to keep the good ones because it costs us money when we have to replace them, and we’re not sure we’ll have the same level of skills” [Shipper]*. In this context, leaders of the city logistics ecosystem might even implement supportive measures to help their *followers* comply with the regulations of the urban ecosystem: *“[The shipper] has bought several gas trucks to help us make the transition, which was a relief because I didn’t know how to manage otherwise” [LSP]*. In more extreme cases, city logistics ecosystem leaders have even agreed to pay higher prices to retain a follower: *“[LSP] threatened to stop the contract because it wasn’t profitable enough. So [the shipper] increased its rates to keep it. It has to be said that [the shipper] depends heavily on him for all its high-risk deliveries in the region” [driver]*.

The challenge in involving city logistics ecosystem *leaders* more in urban ecosystems stems from their strong profit focus. To encourage their participation, public authorities need to think of ways to make sustainable city logistics financially appealing: *“We have to focus on the business model. Business model, business model, business model. One approach could involve the retail sector. We’re thinking about a labeling system for shops that would provide them with a competitive edge” [sustainable city logistics project manager]*. This initiative would motivate receivers to ensure their supply chain meets the urban ecosystem’s environmental and social sustainability standards. It would also encourage them to participate in city logistics, which is typically lacking: *“It’s very complicated to get retailers on board. They prefer not to deal with logistics. And yet, they’re the most important component. Without them, we can’t set up anything” [sustainable city logistics project manager]*. Involving receivers would help shippers realize the value of adhering to urban ecosystems’ standards, as this would be necessary to ensure *“customer satisfaction.”* Consequently, shippers would have to rely more on

LSPs' understanding of urban constraints for optimal customer service, since “urban transport is really their core business” [shipper].

In Figure 2, we summarize how LSPs can harness their involvement in UEs to boost their financial, social, and environmental sustainability. LSPs solidify their *follower* position in the city logistics ecosystem by increasing their engagement in the urban ecosystem (1). This heightened involvement in the UE also helps LSPs in shaping the rules to align more closely with their needs (2). In so doing, LSPs also contribute to the harmonization of strategies across both ecosystems (3), promoting a city logistics framework that is not only efficient but also more environmentally and socially sustainable. Ultimately, this leads to a transition for LSPs from their traditional role as “subcontractors,” focused mainly on aligning with their *leaders*' strategies, to a position where they gain enough autonomy to advocate for their own financial, social, and environmental sustainability (4).

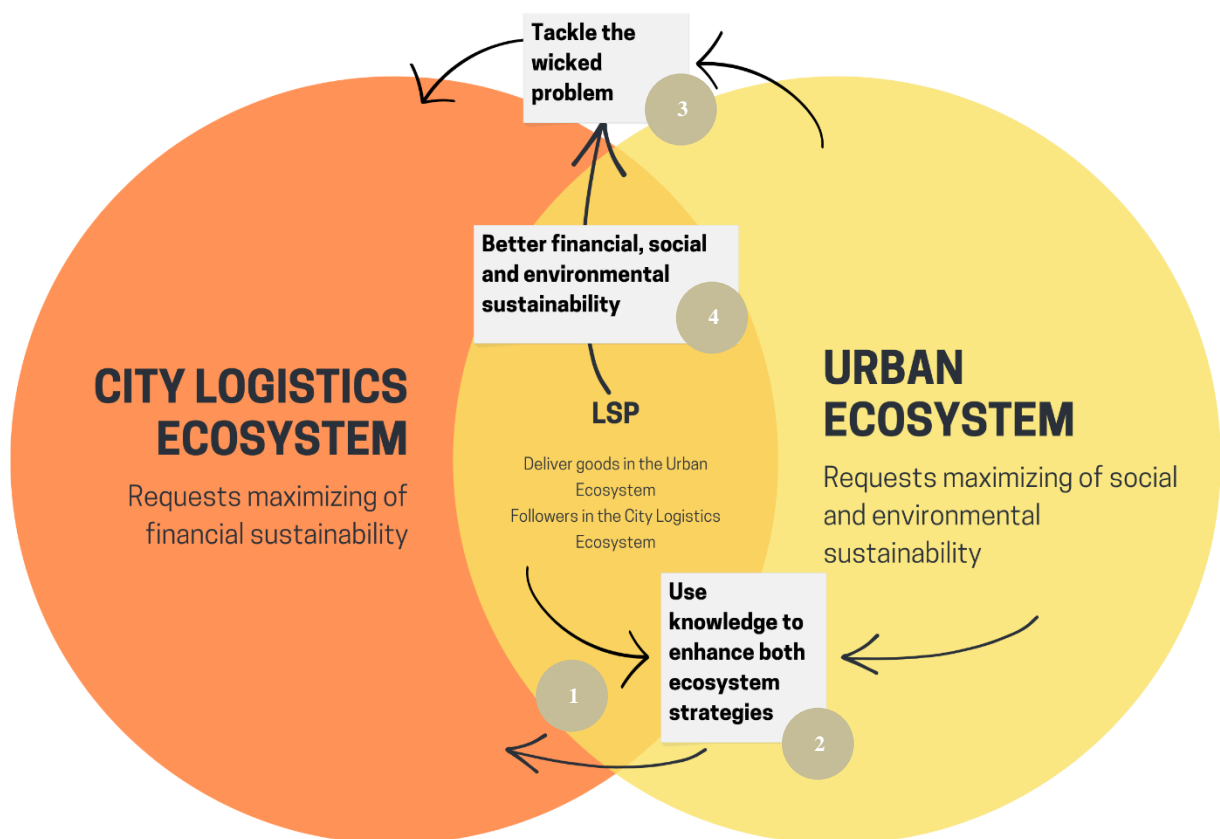


Figure 4. When LSPs tackle city logistics strategic challenges

Discussion

In this paper, we tackle one of the main strategic challenge in city logistics by offering insights into how LSPs contribute to the evolution of city logistics systems that consider the financial, environmental, and social sustainability of actors in both city logistics and urban ecosystems. To this end, we highlight several points of interest.

First, we employ qualitative methodologies to gain a deeper understanding of the daily experiences of LSPs and other actors in city logistics. Building on Wieland et al. (2024), we recognize that qualitative and engaged research can provide valuable and novel insights into supply chain management research. In the context of city logistics, an ethnographic perspective facilitates a more thorough characterization of the connections between actors from both ecosystems, thereby enhancing our understanding of the relationship dynamics among LSPs, shippers, and drivers, as well as among public authorities, LSPs, receivers, and shippers. By adopting this perspective, we move beyond the traditional '*optimization*' approach to logistics and gain a fuller understanding of what city logistics truly represents and could become. As revealed in our study, the optimization of material flows in city logistics is not a primary concern for city logistics ecosystem *leaders* like shippers, who leverage their negotiating power over LSPs for cost-effective deliveries. However, both public authorities and LSPs view it as a way to enhance the environmental sustainability of urban ecosystems and the financial sustainability of LSPs. Finally, the ethnographic method allows us to study city logistics not just as a business ecosystem but also as a phenomenon occurring within specific environments, namely cities. By spending time observing drivers working alongside receivers in the narrow streets of Paris, Toulouse, and Bordeaux, we gained a different perspective on city logistics. It became clear that city logistics is not just the domain of large global companies focused on optimization but also involves smaller-scale and diverse actors collaborating at the local level to enhance the quality of life in cities. Thus, data and key performance indicators give way to collaboration, teamwork, and common sense.

In viewing LSPs as not only business actors but also integral parts of urban daily life and adopting the ecological perspective of cities as natural ecosystems (Golubiewski, 2012), we positioned our research at the intersection of two different ecosystem theories. On the one hand, drawing on recent studies by Lagorio et al. (2017), Zenezini et al. (2018), and Przybylska et al. (2023), we categorize city logistics as business ecosystems. Although this approach is rooted in ecological science (Moore, 1993), city logistics

ecosystems differ significantly from natural ecosystems. Unlike natural ecosystems, city logistics ecosystems do not self-regulate to thrive and enhance the quality of life in their communities. Instead, they are often led by *leaders* whose primary goal is profit maximization. This raises the question of whether city logistics ecosystems can truly be considered business ecosystems, as value sharing, one of the most crucial elements of business ecosystems, seems absent (Adner, 2017; Spigel, 2017; Kapoor, 2018). In our case, LSPs appear to lose value despite increased involvement in city logistics ecosystems. In addition, applying ecosystem theories helps us to identify theoretical gaps in the stakeholder perspective on city logistics (Montabon et al., 2016; Wieland, 2021). Researchers often portray LSPs as outsiders in urban contexts. It may seem that they are more aligned with city logistics ecosystems than with urban communities, and this perception is reinforced by most studies focusing on the interactions between logistics activities and urban stakeholders. However, viewing urban areas as natural ecosystems aids in recognizing that LSPs belong to cities. Furthermore, they constitute urban ecosystems themselves. From this perspective, we conclude that LSPs do not directly interact with cities. Instead, it is the city logistics ecosystem *leaders* who interact with urban ecosystems by choosing to engage LSPs as *followers* within city logistics ecosystems. While this may seem like a trivial assessment at first, we believe that this perspective shifts our understanding of LSPs from simply being subcontractors to recognizing them as intermediaries between the financial requirements of city logistics ecosystems and the sustainability requirements of urban ecosystems. This paper emphasizes the role of LSPs in assisting public authorities to shape the future of city logistics. As these actors collaborate, they discover means of establishing city logistics frameworks that generate value for both urban ecosystems and city logistics ecosystem *leaders*. In so doing, they either promote greater engagement of city logistics ecosystem *leaders* in sustainable city logistics planning or compensate for their lack of involvement by devising solutions to make urban deliveries both profitable and socially and environmentally sustainable.

Applying ecological ecosystem theories to urban contexts also provides a better characterization of public authorities' sometimes counterproductive actions regarding city logistics. Indeed, most actions described in the literature appear to be aimed at constraining LSPs. While addressing the issue of polluting vehicles is essential (Imre et al., 2021; Dablanc, 2022), we argue that the primary reason for the environmental sustainability issues in city logistics activities is the challenge LSPs face in consolidating

their leaders' goods within a single truck and their limited control over the leaders' data due to weak negotiating power with shippers. Furthermore, certain restrictive regulations, like banning heavy trucks in urban areas, align with shipper interests. The location of warehouses, a significant factor in the environmental sustainability of city logistics (Dablanc, 2022), also appears disconnected from the reality that most goods stored in warehouses situated around urban areas never enter the city itself. What is the purpose of enabling warehouses to reintegrate into cities if 70% of the goods they contain do not actively contribute to urban ecosystems? Public authorities' lack of action in city logistics does not stem from a shortage of tools (Dablanc, 2022). It is more about directing efforts toward the right targets. Our study finds that LSPs are not inherently opposed to urban constraints. In fact, their survival is intertwined with the well-being of urban ecosystems, as they are an integral part of urban life. Public authorities, particularly sustainable city logistics project managers, see no need to impose constraints on LSPs. They would rather collaborate with them to develop solutions for making city logistics more environmentally, socially, and financially sustainable. However, the tools at their disposal are limited in influencing city logistics ecosystem *leaders*, as these *leaders* do not belong to the cities. From this perspective, public authorities discover allies in LSPs, who are motivated to work toward a better working environment.

Conclusion

In this paper, we provided a comprehensive analysis of the role of LSPs in aligning city logistics ecosystems with urban ecosystems. Introducing the concept of urban ecosystems to city logistics research and utilizing engaged research methods, such as ethnography, has enabled us to contribute to societal, theoretical, and managerial domains.

First, from a societal perspective, the adverse impacts of city logistics on the social and environmental sustainability of urban areas are concerning. More alarming is the persistence of these issues despite extensive research into the sustainability of city logistics. For decades, public authorities and industry stakeholders have collaborated to develop more sustainable transportation methods, such as electric vehicles, cargo bikes, drones, and others. Management researchers and managers have also tested new logistics approaches, like crowd logistics. However, these solutions have not been effective on a scale large enough. In our paper, we explore a different approach to sustainability. We argue that sustainability issues in logistics should not be the central focus of our efforts.

Rather, we perceive them as a symptom of a deeper disconnection between cities and logistics. We believe that reconciling these two domains could lead to a reimagined concept of urban logistics, shifting the focus from execution to the potential of what logistics in cities could be. Thus, we aspire for this paper to contribute to a more holistic approach to sustainability, considering it as an outcome of collective deliberation on how ‘things could be achieved.’

Secondly, from a theoretical perspective, this paper contributes to our understanding of city logistics. Applying ecosystem theories to both logistics and cities has helped us characterize the role of LSPs in these ecosystems. Our research explores an alternative view of city logistics. A significant contribution is providing scholars with a different narrative of city logistics. While it can be seen as a business ecosystem interacting with urban stakeholders, this view seemed somewhat restrictive based on our field observations. The business ecosystem approach did not fully acknowledge that city logistics ecosystem *followers* are not just interacting with urban stakeholders but an integral part of the city. Conceptualizing cities as natural ecosystems has allowed us to more accurately depict city logistics actors within their actual environment, altering our perspective on them. LSPs, in their natural context, are more than just subcontractors; they seek to improve their working environment and create value for other urban residents.

Thirdly, from a managerial perspective, this paper aims to help reconcile urban communities on logistics and sustainability. We present testimonials from LSPs as members of urban ecosystems and from public actors benefiting from sustainable partnerships with LSPs. We hope these accounts encourage more collaboration among urban actors. This paper does not attempt to provide practitioners with a definitive guide on ‘how to do city logistics.’ Instead, it suggests that practitioners can discover their own answers. Their approach should be twofold: collaborating on these issues and focusing more on identifying the underlying problems rather than just on environmental sustainability.

Lastly, this work has limitations that lay the groundwork for future research on the connections between city logistics ecosystems and urban ecosystems. Owing to its qualitative nature, our work provides a snapshot of city logistics in a specific context where public actors are driven by legislation to rapidly promote more sustainable cities. This situation has exacerbated tensions between LSPs and urban communities. This research needs to be replicated in various settings, such as underdeveloped or developing

countries where city logistics are structured differently (Mareï and Savy, 2021). Additionally, the transferability of an ethnography-based analysis warrants consideration (Lalonde, 2015). To address this question, there is a need to conduct this analysis in different contexts. We expect new insights from these subsequent studies, and we hope they will enhance our understanding of the relationship between city logistics ecosystems and urban ecosystems, as well as the role LSPs play in aligning their what appears sometimes as conflicting objectives.

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