



Prix France Supply Chain du meilleur article en Supply Chain Durable

Règlement de l'édition 2026 concernant les papiers publiés entre le 1er janvier 2024 et le 31 décembre 2025

Article 1

Dans le cadre du **Fonds Supply Chain 4 Good**, l'association France Supply Chain s'associe à l'**Association Internationale de Recherche en Logistique et Supply Chain Management** (AIRL-SCM) pour récompenser une publication scientifique qui apporte une contribution significative dans le domaine de la **Supply Chain Durable**.

La Supply Chain Durable peut se définir comme « *le management des flux (d'informations, physiques et financiers) et des relations avec l'ensemble des acteurs de la Supply chain, avec la prise en compte d'objectifs environnementaux et sociaux* » (selon Seuring et Müller, 2008).

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Article 3

L'**édition 2026** du prix concerne les enseignants-chercheurs ayant publié **un article dans le domaine de la Supply Chain Durable** dans une revue scientifique à comité de lecture entre le **1er janvier 2024 et le 31 décembre 2025**. L'article peut être rédigé en français ou en anglais.

Article 4

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- Importance du sujet traité pour les membres de France Supply Chain (par exemple, lien avec les labs, lien avec le *manifeste pour une supply chain plus durable*).
- Qualité des contributions de la recherche : académique, méthodologique, managériale.
- Impact potentiel des résultats (par exemple, potentiel à influencer des décisions en entreprise ou dans la sphère publique).
- Caractère innovant de la recherche.
- Caractère actionnable de la recherche.

Article 6

Le règlement de ce concours, son calendrier, ainsi que la fiche de candidature (**cf. annexe 1**) sont disponibles sur les sites Internet de France Supply Chain et de l'AIRL-SCM aux adresses suivantes :

<https://www.francesupplychain.org>

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Article 7

Les candidatures à ce « **Prix France Supply Chain du meilleur article en Supply Chain Durable - Édition 2026** » sont constituées d'un dossier, à fournir en **version électronique uniquement**, comprenant l'ensemble des pièces suivantes :

1. la **fiche de candidature** (cf. annexe 1),
2. un **curriculum vitae** court de chaque auteur (1 page maximum) comprenant une liste des publications récentes,
3. l'**article soumis** pour l'obtention du prix, indiquant les références complètes de publication.

Article 8

Envoi des dossiers : les dossiers complets, en un seul pdf, comportant l'ensemble des pièces listées à l'Article 7, sont à envoyer à l'adresse électronique suivante :

info@supplychain4good.org

- Objet du courriel : « **Candidature au prix France Supply Chain du meilleur article en Supply Chain Durable** ».
- Date d'envoi des dossiers : **lundi 2 mars 2026 dernier délai**.



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Logistique et Supply
Chain Management



Annexe 1. Dossier de candidature – Édition 2026

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- dans JSCM (ABS4, FNEGE 1) : de Tarragon, H., Theodoraki, C., Hlady-Rispal, M., & Casteran, G. (2024). Unraveling the Urban Ecosystem: An Ethnographic Study of Logistics Service Providers. *Journal of Supply Chain Management*, 60(4), 75–91.

- dans *Logistique et Management* (à paraître) : de Tarragon, Hugo ; Hlady-Rispal, Martine ; Casteran, Gauthier ; Mendy-Bilek, Gisèle (2026). Durabilité urbaine et logistique : la création d'un acteur-réseau urbain. *Logistique et Management*.

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ORIGINAL ARTICLE OPEN ACCESS

Unraveling the Urban Ecosystem: An Ethnographic Study of Logistics Service Providers

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ABSTRACT

Although there is a growing interest in developing sustainable cities, a significant knowledge gap persists regarding the concrete logistics choices necessary to achieve such cities. Grounded in ethnographic research on city logistics, this study examines how logistics service providers (LSPs) navigate sustainability challenges within the urban ecosystem while also meeting the efficiency demands of their business ecosystem. By repositioning LSPs as a sub-ecosystem nested within the broader urban ecosystem, the article demonstrates how LSPs adeptly address the intricacies of the urban environment and respond to pressures from their business ecosystem. This investigation greatly enhances the understanding of the underlying issues affecting city logistics' sustainability. It deepens insight into the concept of city logistics as a sub-ecosystem within the urban ecosystem, highlighting how its sustainability is intertwined with the structure of the urban ecosystem. From a societal perspective, this research conceptualizes city logistics as a business activity and a vital social service that bolsters urban well-being. The findings suggest a need for further research into the role of city logistics actors as key contributors to urban sustainability.

1 | Introduction

Amid persistent concerns regarding crafting more sustainable cities, city logistics continues to present a major challenge due to its social and environmental impacts (Rodrigues, Ferreira, and Ferreira 2023). Consequently, sustainability has been a significant topic in city logistics research (Dolati Neghabadi, Evrard Samuel, and Espinouse 2019). Like traditional supply chain management (SCM) research, city logistics sustainability issues are often approached from a linear, instrumental perspective (Montabon, Pagell, and Wu 2016; Strale 2019). This perspective typically emphasizes interactions among a limited number of stakeholders and highlights the positive connection between sustainability and performance (Montabon, Pagell, and Wu 2016). Within this framework, city logistics is described as a business ecosystem—an independent network of interconnected actors working to deliver goods to urban areas and create value for each other (Lagorio, Pinto, and Golini 2017; Przybylska,

Kramarz, and Dohn 2023). The adverse environmental impact of city logistics has reached unprecedented levels, leading to a variety of solutions addressing specific aspects of this highly complex issue but not necessarily resulting in a comprehensive resolution (e.g., urban distribution centers, green vehicles, or innovative delivery models) (Strale 2019).

Sustainability is recognized as a societal grand challenge—a highly complex issue requiring collective efforts and intricate solutions (George et al. 2016). The absence of a single root cause or a miracle solution aligns with the concept of a “wicked problem,” which describes social system issues that are complex, ill-defined, and prone to exacerbation by proposed solutions (Rittel and Webber 1973). The concept highlights the limitations of reductionist approaches to social and environmental challenges (Chan and Xiang 2022; Lönngren and Van Poeck 2021). Owing to their complexity, subjectivity, and potential for tension among stakeholders, wicked problems are challenging (if

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not impossible) to solve. Coordination within specific social contexts, rather than through coercive actions, is often more effective (Dentoni, Bitzer, and Schouten 2018). To address these systemic challenges, a broader, more integrative view of logistics as embedded in the social and ecological framework of the urban ecosystem is essential.

The study of wicked problems calls for research that explores phenomena as embedded within the complexity of their social context (Touboullic, McCarthy, and Matthews 2020; Wieland 2021). In this regard, defining city logistics solely as a business ecosystem does not adequately capture its social context and, therefore, fails to provide a comprehensive study of its wicked problem. The role of city logistics actors extends beyond their business network to spread across their broader social context. From an ecological perspective, cities can be characterized as social-ecological systems—a system of nature and people referred to as the urban ecosystem (Li et al. 2017; Rodrigues, Ferreira, and Ferreira 2023). Within the urban ecosystem, logistics activities form an urban ecosystem service, a nested sub-ecosystem that contributes to enhancing local well-being while enabling the urban ecosystem to grow and remain adaptive even when confronted with sudden changes (Leixnering and H  llerer 2022; Rodrigues, Ferreira, and Ferreira 2023). Consequently, a deeper examination of this sub-ecosystem as the arena for interaction between the city logistics business ecosystem and the urban ecosystem would enhance our understanding of the wicked problem surrounding city logistics.

Logistics service providers (LSPs) are a vital link between the city logistics business ecosystem and the urban ecosystem, facilitating the transport of goods between external shippers and internal receivers. As intermediaries between these interconnected ecosystems, LSPs not only facilitate the movement of goods but also play a role in shaping urban sustainability practices. They serve as the primary intersection between global supply chains and cities and are recognized for their potential to enhance supply chain sustainability (Gruchmann, Melkonyan, and Krumme 2018; Liu et al. 2020) while also posing risks to urban sustainability (Strale 2019). This article examines how the LSP sub-ecosystem operates within the two distinct but interconnected ecosystems, aiming to understand its impact on urban sustainability. Therefore, this research investigates the following question: *How can LSPs enhance the sustainability of the urban and city logistics ecosystems?*

This research employs a “perspectival style” to capture the intrinsic complexity and dynamism of the social context of city logistics from the perspective of LSPs, supported by an ethnographic research protocol (Cornelissen, Stephens, and Matthews 2024; Van Maanen 2011; Wieland, Tate, and Yan 2024). Unlike traditional positivist quantitative studies, this perspectival style aims to conceptually frame and interpret the city logistics phenomenon (Darby, Fugate, and Murray 2019; Strale 2019; Wieland, Tate, and Yan 2024). The ethnographic approach used in this study seeks to understand and interpret the city logistics phenomenon within an interpretivist framework, emphasizing that only lived experience is knowable. It offers a pragmatic conception of knowledge based on perspectives, including those of the researchers (Cornelissen, Stephens, and Matthews 2024; Hlady-Rispal, Fayolle, and Gartner 2021). By analyzing

extensive data collected through in-depth fieldwork involving over 40 diverse actors in city logistics over 18 months, this approach facilitates an exploration of the relationship dynamics among actors in their everyday contexts (Van Maanen 2011). Meanwhile, by examining the interactions between LSPs and other stakeholders from both ecosystems, the ethnography sheds light on the challenges LSPs face in harmonizing diverging strategies from multiple viewpoints.

Renewed and deeper insights into the city logistics literature have emerged from the unique data and innovative research protocol. This study builds on previous SCM research by adopting a holistic, systemic approach that views sustainability as a complex, collective process within a social-ecological system rather than as the result of a linear, instrumental approach (Montabon, Pagell, and Wu 2016). Beyond focusing on simple dyadic relationships like earlier studies (e.g., supplier-buyer; Bask et al. 2018), this research broadens the SCM field by including the complexity of social contexts where sustainability issues manifest at the urban ecosystem level (Theodoraki 2024; Theodoraki, Dana, and Caputo 2022). The former linear and instrumental approach is limited in delivering optimal solutions for all ecosystem members and in enhancing the urban ecosystem. By contrast, the social-ecological view, which emerges from an ecosystem approach and views sustainability as a result of interactions among urban sub-ecosystems to improve city functionality, supports a more holistic approach to city logistics within the urban ecosystem.

2 | Literature Review

2.1 | The Urban Ecosystem

Urban ecologists conceptualize cities as social-ecological systems, or “urban ecosystems.” These systems are complex and adaptive, characterized by the interplay between human activities and natural processes (Cinner and Barnes 2019; Preiser et al. 2018). Specifically, the urban ecosystem integrates structure and identity, comprising urban ecosystem services (McPhearson et al. 2022; Tan et al. 2020)—that is, sub-ecosystems that are nested within the urban ecosystem (Audretsch and Belitski 2017) interact at the meso level, and are coordinated by a set of socio-political values providing a framework at the macro level (Leixnering and H  llerer 2022). This perspective encompasses interactions between individuals and organizations at the micro level, sub-ecosystems at the meso level, ecosystem governance at the macro level, and external drivers that influence the urban ecosystem’s development and challenge its resilience, specifically focusing on the city’s ability to adapt to sudden changes while preserving its core characteristics (Glaeser 2021). From this perspective, the urban ecosystem exhibits a unique identity shaped by social and political values that guide a city’s responses to external pressures and abrupt changes (Jones and Svejnova 2017).

However, despite being created and influenced by human activity, the urban ecosystem lacks conscious organization around a specific objective or central control. Instead, it operates through self-regulation and coordination among its sub-ecosystems to maintain favorable living conditions for its inhabitants

(Leixnering and H  llerer 2022; McPhearson et al. 2015). Within social-ecological systems, social components and nature influence each other, which leads to changes in the structure of natural ecosystems. These changes, in turn, provide ecosystem benefits that contribute to human well-being (Cinner and Barnes 2019). For example, exploiting fertile soil can provide food for the community. Cities are particularly influenced by human interaction, including infrastructure and institutions, and by environmental factors that extend beyond the urban ecosystem itself, such as the economy (Jones and Svejnova 2017; Rodrigues, Ferreira, and Ferreira 2023).

As the urban ecosystem hosts interdependent sub-ecosystems, sustainability within the urban ecosystem requires coordination among these sub-ecosystems to mitigate the impact of external factors and ensure the optimal functioning of the urban ecosystem. In this context, urban sustainability is defined as “an adaptive process of facilitating and maintaining a virtuous cycle [...] through concerted ecological, economic, and social actions in response to changes within and beyond the urban landscape” (Wu 2014, 213). This definition acknowledges that urban sustainability relies on the interdependencies and coordination among sub-ecosystems at the meso level, as it involves adaptive urban changes through the structural modification of urban ecosystem services (Li et al. 2017; Tan et al. 2020). At the macro level, it depends on the capacity of the urban ecosystem to adapt to sudden changes, which entail transformative shifts in socio-political values (Jones and Svejnova 2017; Rodrigues, Ferreira, and Ferreira 2023). The integration of both approaches ultimately fosters a resilient urban ecosystem, capable of adaptation while sustaining the same structure over time (Leixnering and H  llerer 2022; Meerow, Newell, and Stults 2016).

Logistics actors are integral to cities, as they constitute the “man-made circulatory system” of the urban ecosystem

(Newcombe, Kalma, and Aston 1978, 3). From this perspective, LSPs shape a supporting urban ecosystem service—the LSP sub-ecosystem—nested within the urban ecosystem and responsible for supporting other sub-ecosystems (Audretsch and Belitski 2017). In this context, LSPs enhance the urban ecosystem by facilitating the distribution of inputs and cycling outputs beyond its boundaries (Tan et al. 2020). This LSP sub-ecosystem ensures the flow of essential goods such as food, medicine, and energy, as well as the supply of consumer goods, thereby fostering the development of the urban ecosystem (Tan et al. 2020). Such sub-ecosystems are essential for enhancing the resilience (McPhearson et al. 2015; McPhearson et al. 2022) and sustainability (Li et al. 2017; Rodrigues, Ferreira, and Ferreira 2023) of the urban ecosystem. From this standpoint, the LSP sub-ecosystem contributes to the urban ecosystem's sustainability as well.

However, city logistics appears to pose challenges to the sustainability of urban areas, as it significantly adds to urban pollution, leading to health issues among residents (Coulombel et al. 2018; Dablanc 2022). From a social perspective, city logistics also perpetuates harsh and unfair working conditions for urban drivers, which is particularly evident in the gig economy, where drivers are subjected to the pressures of “carrots for subsistence” and “sticks for punishment” (Huang 2023, 198). This dysfunctionality results in targeting and rejection from other urban communities, such as public authorities or residents (Dablanc 2022). It appears unlikely that the same entity can simultaneously be crucial for and detrimental to the sustainability of the urban ecosystem. Therefore, there is a need to further explore the concept of “city logistics.” Figure 1 summarizes the urban ecosystem perspective on city logistics, where the latter is defined as a sub-ecosystem nested within the urban ecosystem, whose role is to cycle inputs and outputs from other urban sub-ecosystems, such as retail and health care.

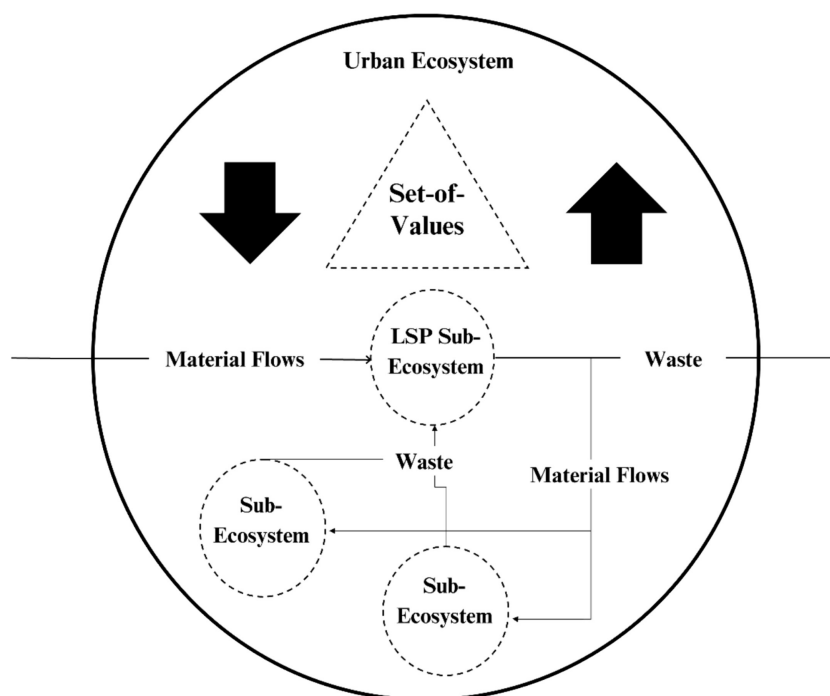


FIGURE 1 | The LSP sub-ecosystem nested within the urban ecosystem.

2.2 | The City Logistics Ecosystem and the Urban Ecosystem

In recent decades, SCM researchers have primarily focused on performance dimensions such as cost reduction and responsiveness (Strale 2019; Wieland 2021). However, the approach still falls short of linking supply chains with societal issues (Touboullic, McCarthy, and Matthews 2020). Treating supply chains as isolated systems that are separate from their broader contexts ultimately leads to a proliferation of “best” practices that favor supply chain actors at the expense of their social system counterparts (Wieland 2021). Research on city logistics, which focuses on the last link between global supply chains and their urban receivers (e.g., retailers and healthcare), is no exception to this approach (Dolati Neghabadi, Evrard Samuel, and Espinouse 2019).

Consequently, environmental and social issues have often been studied only with regard to their impact on economic performance (Montabon, Pagell, and Wu 2016). This narrowly defined view not only hinders the environmental and social transformation of supply chains but also weakens their resilience. Such a deterministic approach tends to disconnect supply chains from the realities in which they operate, making them less adaptable to sudden changes (Wieland 2021). As a part of the broader field of SCM research, city logistics is no exception. For example, its role in urban pollution has reached unprecedented levels (Dablan   2022) despite longstanding concerns over its environmental impacts. Moreover, there is growing apprehension about the social impacts of city logistics, particularly regarding the context of the gig economy, which has been shown to exploit vulnerable populations (Aguilera, Dablan  , and Rallet 2018; Huang 2023).

Researchers have recently been trying to connect city logistics with its systemic environment to tackle its sustainability issues. City logistics involves optimizing logistics and transport activities by private companies in urban areas, with considerations for the traffic environment, congestion, safety, and energy savings within the framework of a market economy (Taniguchi 2015). This definition acknowledges that city logistics actors operate within an environment mostly consisting of urban constraints. The interaction between these actors and their environment (particularly urban infrastructures and inhabitants) is at the heart of city logistics. Understanding how city logistics interacts with its urban stakeholders is crucial for its global optimization (Taniguchi 2015), which is the perfect alignment of city logistics with the constraints of the urban ecosystem.

Research has focused on describing and understanding the points of interaction between logistics and urban stakeholders. Several studies categorize stakeholders based on their involvement in city logistics (Mu         et al. 2016). Others emphasize the benefits of adopting a collaborative framework on the topic of city logistics (Anand, van Duin, and Tavasszy 2016; Marciani, Cossu, and Pomp  tti 2016). More recently, researchers have shifted their focus to understanding the dynamics within city logistics as an ecosystem (rather than just as an aggregation of actors) and its interactions with city stakeholders. In this vein, authors have defined logistics activities as a business ecosystem (Lagorio, Pinto, and Golini 2017; Przybylska, Kramarz, and Dohn 2023; Zenezini et al. 2018).

Comparing the structure of an industry with that of a natural ecosystem provides valuable insights. This comparison reveals each actor's role in the industry and presents a multifaceted perspective on the value generated and shared between the actors within the ecosystem (Adner 2017; Theodoraki and Messeg  m 2017; Kapoor 2018). Thus, characterizing city logistics as both a community of organisms interacting within an environment and a community of actors interacting to produce value (Lagorio, Pinto, and Golini 2017) offers insights into what role it could play in the development of cities.

From the perspective of the city logistics ecosystem, and unlike in the case of social-ecological systems, business ecosystems are typically organized by *leaders* or *keystone players* (Adner 2017; Zahra and Nambisan 2012) whose role is to define the ecosystem's strategy and ensure other actors (i.e., *followers*) align with this strategy and contribute to the realization of the value proposition (Kapoor 2018). In the context of city logistics, shippers (e.g., Amazon) deliver their own products through LSPs, although in some rare cases, shippers might integrate LSPs into their own supply chain (e.g., Amazon's drone delivery program). Likewise, shippers often act as the *leaders* who possess stronger bargaining power, as they define how, when, and at what price goods will be delivered, whereas LSPs are the *followers*, as they execute the delivery of goods within urban areas to receivers (Lagorio, Pinto, and Golini 2017; Zenezini et al. 2018). Following the business ecosystem perspective on city logistics, LSPs play a crucial role in ensuring that the ecosystem's strategy, which is to maximize profit by providing efficient logistics services, is fully implemented.

The city logistics ecosystem perspective provides an interesting point of entry to the study of the lack of sustainability in city logistics. It offers a better understanding of why achieving sustainable transformation within the city logistics ecosystem is so challenging. Firstly, *leaders* in the business ecosystem are not necessarily part of the urban ecosystem, as they tend to be international or national in scope. Therefore, they are not compelled to comply with the urban ecosystem's sustainability, as they do not depend on cities as much as the urban ecosystem depends on their goods to ensure its development (Tan et al. 2020). From this perspective, there is no vital need for the city logistics ecosystem to implement sustainability objectives.

Second, the ecosystem approach enables a shift in perspective regarding sustainability, which no longer concerns only dyadic supplier–buyer or public–private relationships but rather becomes a complex, systemic issue involving actors from both the city logistics ecosystem and the urban ecosystem. In this context, LSPs exemplify the complexity of the issue, as they navigate various interpretations, constraints, and solutions depending on the ecosystem in question. From this perspective, the lack of sustainability has neither a single root cause nor a single solution but instead relies on better coordination among members of both ecosystems to effectively address the issue.

This perspective aligns with the concept of a wicked problem, an ill-defined and complex issue that extends beyond individuals and permeates global systems (Rittel and Webber 1973). Wicked problems are well known to SCM researchers, who advocate for research that tackles complex issues through dynamic

theoretical frameworks. These frameworks should span multiple levels of time and space to better capture the complexity of the social context in which supply chain phenomena occur, rather than relying on static and reductionist approaches (Touboul, McCarthy, and Matthews 2020; Wieland 2021).

However, little is known about the dynamics between the city logistics ecosystem and the urban ecosystem and how they affect the latter's sustainability. Most studies on city logistics ecosystems focus on exploring the structure of city logistics as an ecosystem and its interactions with urban stakeholders to enhance its efficiency (Lagorio, Pinto, and Golini 2017; Przybylska, Kramarz, and Dohn 2023; Zenezini et al. 2018). However, by shifting the focus to the LSP sub-ecosystem, new insights may be gained regarding the impacts of these interactions on the sustainability of the urban ecosystem.

City logistics researchers have long noted that LSPs occupy a follower's role within their business ecosystem, where they tend to be vulnerable to the sometimes abusive behavior of shippers (Wolf and Seuring 2010; Kim et al. 2022). As shippers prioritize efficient logistics services, LSPs may adopt a profit-driven approach to sustainability and show little interest in advocating for practices that align more closely with the needs of the urban ecosystem (Bask et al. 2018). However, it is crucial to recognize that LSPs, also constituting the LSP sub-ecosystem nested within the urban ecosystem, must adhere to the rules of the social-ecological system to avoid expulsion or replacement.

The conventional subcontractor narrative prevalent in city logistics research often overlooks this aspect of the issue. By solely adopting a business perspective and portraying LSPs as mere subcontractors, LSPs' contribution to the sustainability of urban ecosystems has often been overlooked. From our viewpoint, analyzing the interactions between an LSP sub-ecosystem and other urban ecosystem communities can offer valuable insights into aligning the business ecosystem's strategies with the urban ecosystem's sustainability. In so doing, we provide new perspectives

on the logistics dilemma of maximizing profits while ensuring sustainability. Figure 2 illustrates the LSP sub-ecosystem as it is nested within both the city logistics and the urban ecosystems. It also details the current and expected roles this sub-ecosystem plays in each, according to the literature.

3 | Data Collection and Analysis

This research follows an ethnographic approach that engages with contextual data and reveals the dynamic interactions between actors and their perceptions of city logistics, leading to perspectival theorizing (Cornelissen, Stephens, and Matthews 2024; Wieland, Tate, and Yan 2024). This approach has the potential to yield alternative conceptualizations and offer valuable insights into SCM research (Wieland, Tate, and Yan 2024). Ethnography involves the study of interconnected respondents within a context, emphasizing relationships and exchanges among different actors. The interpretivist epistemological stance treats lived experience as knowable (Husserl 1970), suggesting that a subject's understanding of a situation is inherently connected to both the situation and the subject experiencing it. Our objective is to describe and understand the events within a specific context by offering a comprehensive analysis of each actor's perception of reality (Avenier and Thomas 2015; Mees-Buss, Welch, and Piekkari 2022).

Therefore, the purpose of our study was to explore how LSPs contribute to the sustainability of the urban ecosystem, capturing "the micro dynamics of social reality from the perspective of the people constructing and living it" (Zilber and Zanoni 2022, 2). We sought to comprehend how context influences LSP roles within the city logistics network and their adaptation strategies to thrive in both their professional network and their environment, particularly the urban ecosystem. By examining these dynamics, we aimed to reveal the interconnectedness of LSPs and their ability to navigate the complexities of urban logistics.

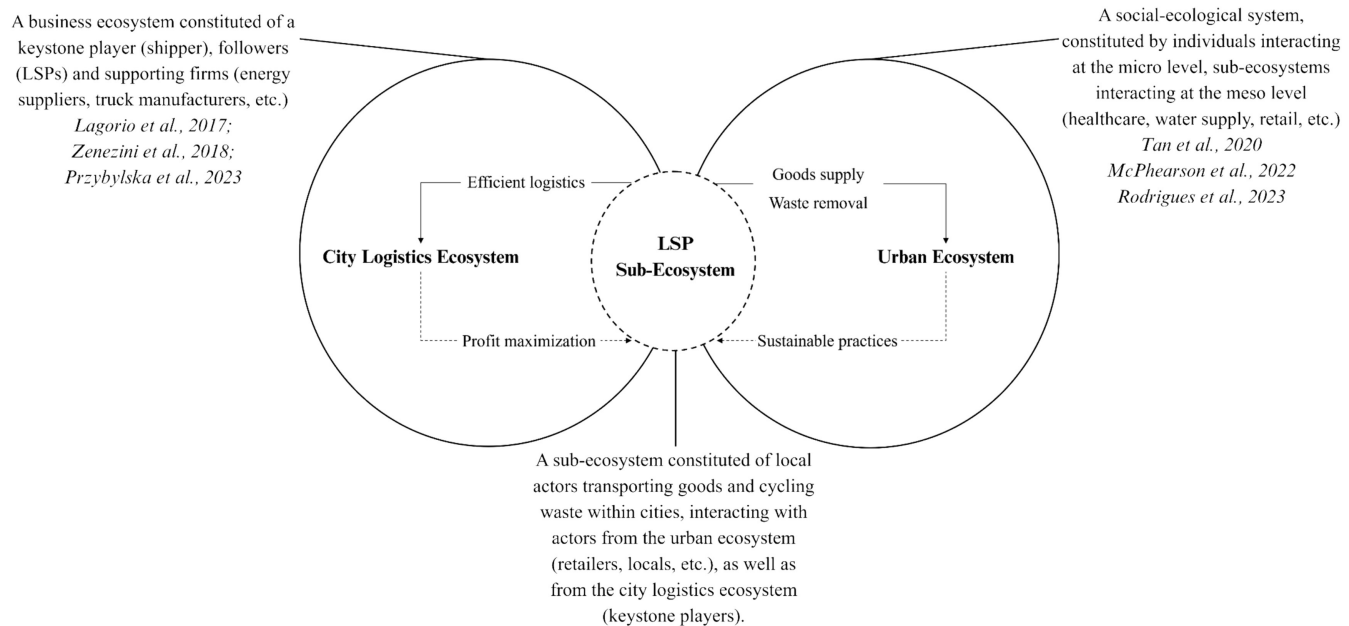


FIGURE 2 | The LSP sub-ecosystem nested within the city logistics and the urban ecosystems.

From March 2022 to September 2023, we conducted various data collection sessions, including participant observation, interviews, meetings, and workshops with multiple city logistics actors. Following the positionality principle, which addresses the researchers' impact on data collection and interpretation (Bourke 2014; Corlett and Mavin 2018; Reich 2021), the lead researcher was fully integrated as an insider observer in a truck body manufacturing company involved in city logistics, referred to as IAF. This approach ensured privileged access to the data, whereas the rest of the research team maintained outsider roles to uphold the credibility of the results (Aguinis and Solarino 2019).

LSPs constitute a sub-ecosystem within the urban ecosystem, providing inputs to other sub-ecosystems and cycling waste outside the city (Tan et al. 2020). They also serve as *followers* in the city logistics ecosystem, delivering efficient logistics services to their *leaders* and aiding in profit maximization in the business ecosystem (Lagorio, Pinto, and Golini 2017). At the macro level, the city logistics and urban ecosystems operate, whereas the LSP sub-ecosystem, alongside other sub-ecosystems (e.g., health care, retail, education, recreational services, and public transportation services), forms the meso level, with interactions occurring at the micro level (Theodoraki and Messegheem 2017). This study focuses on the LSP sub-ecosystem's interactions with both the city logistics and urban ecosystems, particularly the LSPs' role as intermediary between the two ecosystems. We analyze how the LSP sub-ecosystem aligns the profit-oriented goals of the city logistics ecosystem with the urban ecosystem's sustainability goals.

The participating LSPs were primarily small and medium-sized companies, with workforces ranging from five to 500 employees. These companies were deeply integrated into their urban ecosystem, operating at regional, county, or district levels, primarily in the Bordeaux and Toulouse regions of southwest France. 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). Moreover, it is a historically significant customer base for IAF, which facilitated contact with an original sample of LSPs.

Contact was made with these actors through a partnership, providing initial access to a sample of LSPs that have longstanding business relationships with IAF, and especially to the sales representative for the city logistics product line, referred to as Ange. The trust-based relationship between the LSPs and IAF, especially with the sales representative providing ongoing support, facilitated informal exchanges and granted full access to key research sites relevant to the study, including warehouses, trucks, and employees. In collaboration with Ange, IAF's sales representative responsible for the city logistics product range, LSPs were approached 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. Ange presented the research team's purpose as supporting IAF in the development of its products for city

logistics. This approach allowed for an emphasis on the research team's non-judgmental posture regarding LSPs and city logistics issues.

Our initial interactions with LSPs took the form of interviews, typically lasting 2 to 3 h, systematically focusing on four main themes: (i) the urban delivery challenges they faced, (ii) the prospects for LSP businesses, (iii) their relationships with partners, and (iv) their perspectives on the environmental and social challenges of city logistics. Ange would initiate discussions by inquiring about the LSPs' current difficulties and challenges. The informal nature of these conversations, combined with Ange's amiable rapport with the company leaders, facilitated open and honest dialog. The researcher overseeing the fieldwork intervened, when necessary, to focus more deeply on a specific topic, a prior finding, or a theoretical concern. Throughout the interviews, verbatim quotations and noteworthy observations were faithfully recorded in a logbook. Moreover, the interviews were systematically debriefed with Ange to ensure consistency. These meetings laid the groundwork for in-depth fieldwork on the LSPs' premises, making it possible 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 the different actors.

We complemented this approach with extensive observation phases conducted over 14 mornings, from 7 to 11 a.m. The LSPs identified this time frame as the most conducive for observing urban freight transport and witnessing interactions between urban receivers and drivers. Observations took place in the urban centers of Bordeaux, Toulouse, and Paris, in areas designated as "critical" due to high commercial density and urban challenges like narrow streets, traffic congestion, and accessibility issues. These settings provided an ideal environment for studying the delivery drivers' work. During these sessions, opportunities consistently arose to engage in discussions with both drivers and receivers. To facilitate these interactions and initiate conversations, Ange first approached them as a "truck body manufacturer 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 bicycle 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 bicycle delivery drivers, thereby gaining insights into the nature of their work, their working conditions, motivations, and how they complement more "traditional" logistics practices.

As we collected data, it became essential to provide context for several of our observations. 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. InTerLUD's initiatives in support of sustainable city logistics span nearly 60 urban areas across France and offer a valuable opportunity to compare our data with the program's insights across various contexts. We

further refined our analysis by actively participating in various public events dedicated to freight transport.

These events provided deeper insights into the strategies employed by leaders in the urban ecosystem, as well as their interactions with LSPs and other city logistics stakeholders. These gatherings consistently brought together a diverse range of actors from both ecosystems, facilitating valuable observations of interactions and discussions among different actor categories. In addition, we consulted numerous professional journals and documents, including the recent special edition of the French *Administration* journal (2022) on changes in the logistics profession, as well as “the city logistics best practices guide” by InTerLUD, which outlines the systemic challenges of city logistics for local authorities. We also examined commercial materials from truck manufacturers. These resources formed the basis for discussions with LSPs concerning their relationships with manufacturers and the limitations associated with technical advancements.

Throughout this investigation, we recorded all observed subjects in a logbook and captured approximately 350 photographs and 50 videos to document observations. The continual ethnographic data analysis was enriched by follow-up visits to the field (Van Maanen 2011; Zilber and Zanoni 2022). To deepen our understanding, we frequently compared data collected from various sources to identify differences or similarities and enrich our observations. More broadly, the data analysis involved a constant re-examination of our logbooks and rewriting of our observation summaries.

As the study progressed, we developed figures to summarize the data into major analytical axes and to underscore noteworthy findings. These figures were subsequently shared with both the respondents and scholars and compared with existing literature to draw on a better-fitting theoretical framework and refine the subsequent phases of fieldwork. These multiple iterations between literature and fieldwork resulted in new figures and the formulation of new theoretical insights, a characteristic feature of hermeneutic interpretive research (Mees-Buss, Welch, and Piekari 2022). To minimize biases, the researchers conducted regular meetings and requested the opinions of experts not involved in the study or the organization to maintain an outsider’s perspective on the research design and findings (Aguinis and Solarino 2019).

The quotations transcribed in the results were identified using a “storyboarding” method. This method involves a thorough screening of the data to “effectively order claims, ensure that appropriate voices are being used, and to assist in developing transitions between claims” (Rockmann and Vough 2023, 2). In the next section, we present the research results by providing field observations, which we analyze in light of the previously discussed theoretical framework.

4 | Results

4.1 | City Logistics Ecosystem

Before moving on to specific findings, it is important to understand the dynamic environment in which LSPs operate and the dual pressures they face from both the urban and

the city logistics ecosystems. LSPs no longer feel welcome in the urban ecosystem community. As LSP 1 expressed, “Transport pollutes cities, so everyone targets us.” By “everyone,” they referred to several categories of urban inhabitants: Locals “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 that public authorities are even considering charging us to enter the city.” [LSP 2]. Even though LSPs consider adaptability a key component of their job, they find the shift toward environmental sustainability particularly challenging.

I do not know where [the company] will be in five years; at least I will not be around to see it.

[LSP 3]

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 3]. From this perspective, LSPs have no choice but to meet their *leaders’* demands, often at the expense of complying with urban regulations.

4.1.1 | Cities and Logistics Ecosystems: LSPs “between a rock and a hard place”

In city logistics, LSPs serve as intermediaries between shippers and their clients—the receivers in urban areas. They recognize their crucial role as intermediary between “two different types of customers” [LSP 3] 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 [shippers] won’t allow us to pool their data to make grouped deliveries” [LSP 7].

By contrast, their business partners are interested in more eco-friendly deliveries for their image but are reluctant to cover 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 [shippers] like it, but it costs more and is more restrictive to use, so it’s not profitable at all” [LSP 5]. 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” [LSP 1].

The drive for profit maximization within the city logistics ecosystem 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 1]. This situation results in “relying even more on drivers whom we’re already unable to retain” [LSP 2]. To mitigate this issue, public actors “need to

consider the progress made by manufacturers to define a realistic timetable” [LSP 2].

Drivers aren't big fans of electric or [biogas] trucks ... Despite what [truck manufacturers] or [large shipping companies] say on social networks, they add more constraints. Sure, it does not make any noise, and it does not pollute, but that means we have to be even more vigilant so residents can hear us, and we have to plan our day around recharging ... With electric trucks, it's complicated when you only take a 20-min break at lunchtime or no break at all. With gas, it's even worse because it's super complicated to find supplies or gas stations.

[Driver 3]

The need for LSPs to rapidly update their fleet with greener vehicles to comply with the urban ecosystem's rules is a strong constraint, as it does not align with their profit-maximization objectives in the city logistics ecosystem. Moreover, although 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 do not 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 7]

Consequently, shippers tend to increase their control over LSPs' activities: "I now only manage the drivers, which is the most difficult aspect. Besides, [shippers] are not crazy; they charge me for training drivers to use their own tools" [LSP 1].

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.

4.1.2 | Drivers Managing Tensions in the City Logistics Ecosystem

Shippers are not necessarily required to comply with the urban ecosystem's rules, as "they don't belong to the metropolis per se, so they don't feel concerned" [City Logistics Project Manager (CLMP) 1]. This misalignment between shippers' requirements and rules within the urban ecosystem 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 the city logistics ecosystem. 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 [shipper], I've hired 250 delivery drivers," LSP 1 revealed. "Even my son doesn't want to work for the company, and I understand him."

Drivers face a negative perception of their activity: locals "treat us like an obstacle" [Driver 1], whereas retail outlets "are not even equipped to help us unload" [Driver 2], and urban authorities "set up bullshit traffic rules" [Driver 5]. Ultimately, drivers feel more like disturbances 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 1].

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: "[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 6]. 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 ... because traffic in the city has become unbearable, we have access to fewer and fewer places, we are 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. [Asked about what he will do then:] I'll still be a delivery driver, but not in urban delivery. That would break any man. [discussion with Driver 1 on a delivery day]

This testimony emphasizes 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 h, including lunch, remains constant, as does the number of drivers, because LSPs might not have sufficient financial capacity to hire new employees. In the context of this study, 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, LSP 1]. 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 cannot drive gently if you want to finish your day in your working time. As a result, you are 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 1]

4.1.3 | The Urban Ecosystem Monitoring LSPs

Initially, it seems profit and sustainability cannot coexist, as higher profit requires increased productivity, which can lead to more pollution, safety issues, degraded working conditions, and transgressions from both drivers, who manipulate monitoring systems, and LSP company leaders, who do not comply with traffic restrictions.

Overall, neither the ecosystem *leader* nor the receiver is prepared to compromise to support LSPs: “They don't care if there are traffic bans or restrictions; they just want the delivery to be on time” [LSP 1]. Therefore, LSPs must choose between satisfying their customers' needs and respecting urban regulations.

It's been [several] years since we have been forbidden to go downtown with these types of trucks, but I still do it. I need it to live. And [public authorities] cannot monitor everything. We fall through the cracks. The police open up the areas themselves.

[LSP 1]

Still, LSPs will not “fall through the cracks” for long. Their transgressions are driven by the need to adhere to the city logistics ecosystem's strategy to avoid being replaced. Their focus is not on maximizing profit but rather on ensuring they are not replaced by other actors in the city logistics ecosystem. This leads them to do anything, even breaking the law, for their clients to be delivered on time: “At the end of the day, to make money, you have to do what the shipper wants” [LSP 2].

However, although the perfect alignment with the *leader's* strategy is the best way for a *follower* to maintain their position in the ecosystem, LSPs belong to two different communities. Moreover, their alignment with the city logistics ecosystem strategy also depends on their capabilities to remain a member of both ecosystems, as they help “shippers reach places where they don't have a foothold and don't want to go themselves” [LSP 2].

LSPs' misalignment with the urban ecosystem's objectives regarding social and environmental sustainability leads public authorities to support the development and integration of more suitable actors.

They [public authorities] gave [green logistics company] access to premises right in the center of town! It's outrageous, considering they will not even grant us an extension when we are in [distant suburbs]. What's more, it shows that elected representatives do not know the first thing about it. It's a PR stunt, yet in the meantime, we are taking it in the neck!

[LSP 1]

However, these new actors, specializing in environmentally friendly logistics activities like bicycle logistics, are not always financially viable, despite clear support from the urban ecosystem: “They [bicycle logistics company] aren't profitable at all ... The business took off during the COVID crisis, but they never managed to make any money, so the new CEO of the group [to which the bicycle logistics company belongs] stopped the bleeding and announced the closure in December” [driver, LSP 8].

Although these models are less harmful to the environment and align more with the urban ecosystem's regulations, their negative impact on society is worrying. They exacerbate social inequalities in a sector where “the independent driver is only nominally independent; his day is no longer his own,” and “in disadvantaged neighborhoods [they represent] the majority of jobs created” (Eric Sacher, Ministry of Ecological Transition and Territorial Cohesion, 2022, 2). Moreover, these models seem to benefit from the lack of regulation: “They take wrong turns, drive on sidewalks, bike lanes ... I don't see how this is safer than heavy trucks” [LSP 1], showing that the urban ecosystem concerns predominantly address environmental sustainability yet overlook the triple-bottom-line approach to sustainability.

Public authorities' involvement in city logistics extends beyond alternative transport modes. “We'll never be able to replace the truck, and it would be foolish to try. The goal is to consolidate loads to reduce the number of vehicles on the road” [CLPM1]. To that end, they plan to collaborate with LSPs “to improve logistics flows in cities, for example, by creating dedicated routes for heavy goods vehicles” [CLPM1]. They recognize that most issues stem from LSPs' lack of control over delivery modes and routing. Involving shippers in these discussions also presents some challenges: “Shippers don't want to get involved. They just delegate to the LSPs. We aim to show [shippers] how they can make money by getting involved in these discussions. It's about rethinking the business model” [CLPM1].

The misalignment between the city logistics ecosystem's focus on profit maximization and the social and environmental sustainability issues is evident in the LSPs' daily routines. As they strive to align perfectly with their business ecosystem *leader's* strategy to maintain their position, their actions increasingly conflict with public authorities' sustainability objectives. This misalignment ultimately hinders the LSPs' financial, social, and environmental sustainability, compounded by their growing exclusion from the urban ecosystem, which increases their difficulties in adhering to

the city logistics ecosystem's strategy. Because profit maximization often means less social and environmental sustainability, aligning the objectives of both the city logistics ecosystem and the urban ecosystem seems impossible at first glance.

However, we also note that profit maximization in the city logistics ecosystem does not necessarily enhance LSPs' own financial sustainability. This is evident during drivers' daily work: "No matter how many drop-off points we have, we always get paid the same: a flat rate of €250 for the day's work" [LSP 1]. Moreover, enhancing the alignment of LSPs with the regulations of both the city logistics and the urban ecosystems would benefit both sectors, as city logistics is "crucial for the region's economy, which is our priority" [CLPM2]. In a similar vein, "partners who are well integrated into the region are important to us: They ensure fewer accidents, fewer hazards, and greater customer satisfaction" [Shipper 1].

Figure 3 illustrates how the LSP sub-ecosystem's position at the forefront of the conflict between both ecosystems hinders LSPs' financial, social, and environmental sustainability. (1) As the LSP sub-ecosystem fails to navigate profit maximization pressures from the shippers in the business ecosystem and (2) the sustainability objectives of the public authorities in the urban ecosystem, (3) LSPs struggle to maintain a sufficient level of financial, social, and environmental sustainability to survive. (4) Consequently, they risk exclusion from both ecosystems. In either scenario, the broader sustainable transformation of city logistics is impeded as the population in the sub-ecosystem decreases.

4.2 | Urban Ecosystem

4.2.1 | LSPs' Role in the Urban Ecosystem

We now shift from analyzing the dual pressure experienced by LSPs within the urban and city logistics ecosystems to examining their proactivity in the urban ecosystem

and the role this proactivity plays in meeting the demands of both urban governance and logistics partners. Public authorities should ensure that logistics activities contribute to the urban ecosystem development rather than merely focus on the profit-maximization strategies of city logistics ecosystem *leaders*. Achieving this goal requires collaboration 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" [CLPM1].

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 ecosystem: "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 to reduce costs by sharing our routes" [LSP 7]. Public authorities must involve LSPs in these projects to ensure these initiatives align with the LSPs' financial constraints: "There have been many similar initiatives [mutualization] before, which have 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 [LSPs]" [CLPM1].

The idea of collaboration is driven by public authorities' recognition of their limited expertise in logistics and the need for efficient logistics for the urban ecosystem 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" [CLPM2]. These mistakes often arise from an elected official's reaction to complaints from their constituents:

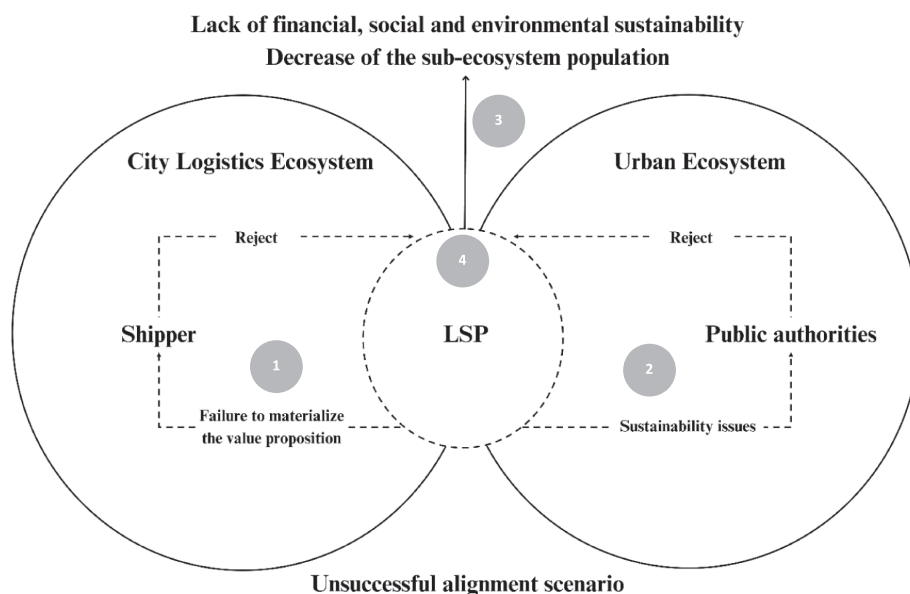


FIGURE 3 | When the LSP Sub-Ecosystem Fails to Align Both Ecosystems.

Elected representatives, this is one of the most complicated issues. For example, we have banned vehicles over 19 tons from entering the town center. Already, it makes no sense to create restrictions based on vehicle weight. It goes against the idea of mutualization, it creates more congestion, and it's totally arbitrary! It's not the tonnage that prevents trucks from moving through cities but urban constraints, like narrow streets. If we were intelligent, we'd be working to regulate based on length and height, not weight. 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.

[CLPM1]

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 the urban ecosystem. 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 how we'll find ways to pool resources” [LSP 7]. Both LSPs and public authorities recognize the mutual benefits of collaboratively redefining 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.

The term city logistics does not mean a thing. First of all, there is not 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 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.

[CLPM1]

4.2.2 | Blurred Boundaries Between City Logistics and Urban Ecosystems

City logistics ecosystem *leaders* are more likely to retain LSPs as *followers* when these LSPs actively engage 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 service and ability to manage daily uncertainties. For shippers, it is a matter of reducing costs, which increases their 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 1].

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 1].

In this context, *leaders* within the city logistics ecosystem may adopt supportive measures to ensure their *followers* comply with the urban ecosystem's regulations: “[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 10]. 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 7].

The challenge in involving city logistics ecosystem *leaders* more in the urban ecosystem 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” [CLPM1].

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” [CLPM1]. Involving receivers would help shippers realize the value of adhering to the urban ecosystem's 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, because “urban transport is really their core business” [Shipper 1].

Public authorities view this alignment between the city logistics ecosystem and the urban ecosystem as promising, with their “systemic analysis” potentially improving coordination among logistics players. However, they recognize that using this approach requires better internal coordination to prevent it from becoming merely a “beautiful utopia” [CLPM1]. City logistics, often perceived as a “necessary evil” [CLPM3] by elected officials, suffers from inadequate resources, skills, and poor alignment with broader urban planning projects. A significant issue is the “lack of coordination between city logistics initiatives and other components, like infrastructure or people transportation” [CLPM1].

However, “we’d benefit from the commitment of the players involved to gain legitimacy with other departments. That’s why I’m a great believer in our systemic and collaborative approach, as it strengthens our position” [CLPM1]. Furthermore, involving shippers is essential for decisions on warehouse locations. “Most large suburban warehouses are owned by shippers such as [Shipper 1] or [Shipper 2]. As far as land is concerned, they are the most demanding. But we can’t let them control everything. Hence, the metropolitan authorities need to engage, acquire land, and ensure it is used by transporters for urban distribution, rather than by large shippers who transport only a small amount of merchandise into the city” [CLPM1].

4.2.3 | The Intermediary Role of the LSP sub-Ecosystem

Shippers and the urban ecosystem are deeply interconnected. This testimony highlights a significant conflict between shippers and LSPs (their *followers* in the city logistics ecosystem), who compete for spaces to expand their respective operations. In this conflict, public authorities are not exactly trying to “control” logistics activities; rather, they are working in favor of LSPs “who have less power than shippers” [CLPM1], since LSPs only contribute to delivering goods in the urban ecosystem. This dynamic shifts as city outsiders, namely shippers, enter into competition with city insiders (i.e., LSPs) and as public authorities advocate for the interests of the latter.

LSPs do need shippers—after all, whose goods would they transport if not theirs? But are they working *with* or *for* the shippers? “Originally, [LSP] started with one or two big customers [shippers]. [LSP] is often just a guy in a truck who starts delivering for [big Shipper 1] or [big Shipper 2]. Then, little by little, he grows, buys other trucks, hires drivers, buys a depot ... but he remains loyal to his first customers. That’s how it works” [LSP 2]. This strong bond between LSPs and their favorite shippers causes concern for diversification or mutualization, as “[Shipper 1] will never accept delivery of [Shipper 2]’s pallets at the same time as his own” [LSP 1]. Despite being mandatory for French shippers to “make sure their subcontractors also work for other shippers” [Shipper 1], sharing data or mutualizing trucks is not on the agenda.

From this standpoint, shippers must have warehouses around cities, either for LSPs to collect their goods or to have their goods delivered by intermediaries to LSPs’ urban locations: “It’s not [shipper] who comes to deliver, it’s another carrier. It’s interesting because we can work with him to improve our supply flow. Today, we have our goods delivered by van because it’s convenient for [shipper], who can send us the goods as and when he receives them in his depot in [the inner suburbs]. But we’re pushing with the city council to ensure this flow is by heavy goods vehicles. This would allow us to receive goods only once” [LSP 7].

It seems that LSPs’ relationships with city logistics ecosystem *leaders* are fundamentally different from their collaboration with public actors. The former primarily engage LSPs to generate profit, without an aim to distribute value among city logistics ecosystem members: “No matter how much we invest in the partnership, we’re paid a fixed rate per working day, €250, regardless of how many parcels we deliver” [LSP 1].

Furthermore, there is competition for urban space between city logistics ecosystem *leaders* and LSPs, particularly for warehouse construction. These *leaders* also tend to exert more control over the LSPs’ core activities and organizational aspects, such as driver management: “[Shippers] decide whether I should keep or fire a driver. They set performance indicators, which are impossible to respect because they contradict each other, and if the driver doesn’t meet them, they refuse to work with them. It’s crazy when you think that they ask us to hire drivers for them, which means that if they don’t want the driver, you’re forced to fire him” [LSP 1].

By contrast, the *leader–follower* dynamic between LSPs and public authorities is more pronounced. They seem to function symbiotically, pursuing the goals of creating value for city inhabitants and generating value for each other. Thus, LSPs have a strong interest in collaborating with public authorities rather than solely working for shippers: “It’s really important for a player like us to work with the municipality. It enables us to work with them on better ways of doing our business and ensure our long-term growth” [LSP 6].

In Figure 4, we summarize how the sub-ecosystem can play a mediating role between the city logistics and urban ecosystems. (1) LSPs receive support from public authorities by increasing their engagement in the urban ecosystem, which allows them to improve their sustainability. This heightened involvement in the urban ecosystem also helps LSPs ease the materialization of the business ecosystem’s value proposition, thus allowing them to match shipper’s profit requirements. (2) In turn, they receive support from the shipper and solidify their *follower’s* position within the business ecosystem. (3) In so doing, LSPs contribute to the crafting of a virtuous circle between both ecosystems, thus promoting a city logistics framework that is not only efficient but also more environmentally and socially sustainable. (4) 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 success, leading to the development of the sub-ecosystem population.

5 | Discussion

This research addresses the wicked problem of city logistics by detailing how LSPs contribute to sustainability within both urban and city logistics 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 and urban ecosystems. Building on Wieland, Tate, and Yan (2024), we recognize that qualitative, interpretive, and engaged research can provide valuable and novel insights into SCM research. Our ethnographic approach enabled us to study city logistics not just as a business ecosystem but as a phenomenon within the urban ecosystem. Observing drivers working alongside receivers in the narrow streets of Paris, Toulouse, and Bordeaux provided a perspective on city logistics that complements previous work. It became clear that city logistics is not just

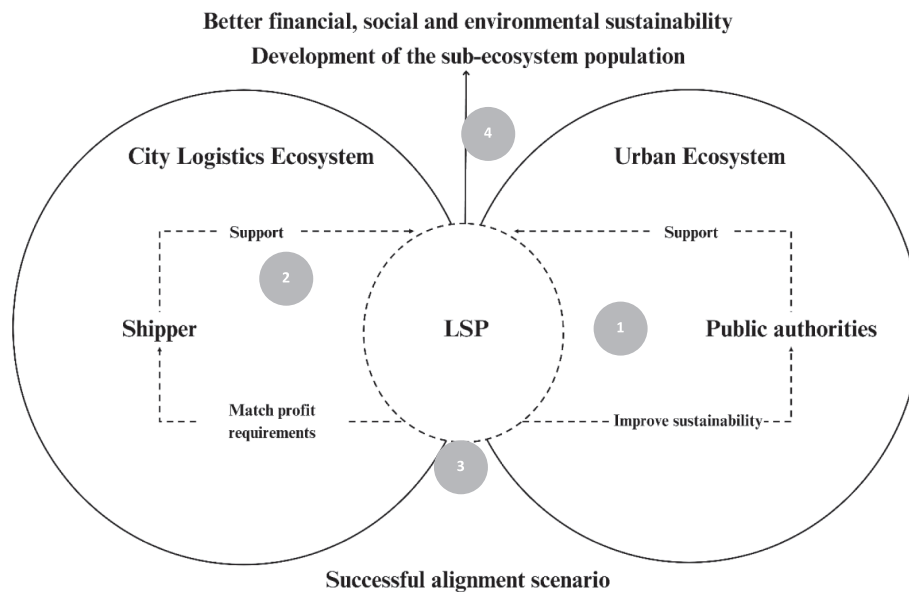


FIGURE 4 | When the LSP sub-ecosystem successfully aligns both the business ecosystem and the social-ecological system.

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 are complemented by collaboration, teamwork, and common sense.

In the context of city logistics, the ethnographic approach provided a deeper understanding of the micro-level interactions between actors from both ecosystems, thereby enriching our comprehension of the dynamics between the LSP sub-ecosystem and other sub-ecosystems at the meso level. In addition, this article illustrates the relationship between the LSP sub-ecosystem and the governance of both urban and city logistics ecosystems, emphasizing the LSP sub-ecosystem's influence on the values governing the urban ecosystem (Jones and Svejnova 2017; Leixnering and Höllerer 2022) and the strategy of the leader in the business ecosystem (Adner 2017).

In line with the approach of ethnography (Van Maanen 2011; Zilber and Zanoni 2022), this research seeks to amplify the voices of those individuals at the heart of city logistics. We present insights from drivers, city project managers, and small- to medium-sized business owners, all of whom are “at the forefront of city logistics.” Their individual experiences have led us to recognize that there is no distinct entity called “city logistics.” Indeed, transportation activities have always been an integral part of the urban ecosystem (Newcombe, Kalma, and Aston 1978). Their purpose is to contribute to the residents' well-being and ensure they have access to necessities, thus contributing to the development of the urban ecosystem (Tan et al. 2020).

Second, the conceptual misuse of the city logistics concept has theoretically detached logistics actors from their environment. In-depth fieldwork reveals LSPs from a different perspective—not merely as subcontractors but as social entities and local SMEs within the urban ecosystem. They bring together business owners, employees, and drivers, all interacting with other sub-ecosystems within the urban ecosystems on a daily basis.

By adopting this perspective, we move beyond the traditional “optimization” approach to logistics and gain a fuller understanding of the role that LSPs, or more broadly city logistics, play within the urban ecosystem. As revealed in our study, the optimization of material flows to benefit the urban ecosystem is not a primary concern for the city logistics ecosystem keystone players, who instead leverage their power over LSPs for cost-effective deliveries that benefit the business ecosystem regardless of their impact on the urban ecosystem. Nevertheless, LSPs, in collaboration with local public authorities, strive to align these profit objectives with sustainability in the urban ecosystem. We draw on the urban sustainability literature, assessing that it is not achieved solely by constraining LSPs to adopt more sustainable practices but also by fostering adaptive urban changes through structural modifications of the sub-ecosystems (Leixnering and Höllerer 2022; McPhearson et al. 2015), as well as transformative shifts in socio-political values (Jones and Svejnova 2017; Leixnering and Höllerer 2022).

Surprisingly, neither of these perspectives aligns with the definition of city logistics as a process of optimizing urban transportation flows within an urban framework (Taniguchi 2015). The city logistics ecosystem operates under a profit-maximization logic, disregarding the alignment of physical flows with the constraints of the urban ecosystem. By contrast, we illustrate that the urban ecosystem does not prioritize the optimization of logistics flows; instead, it focuses on adapting them to its natural evolution to maintain resilience (McPhearson et al. 2015) and sustainability (Li et al. 2017; McPhearson et al. 2015), thereby emphasizing both resilience and sustainability over efficiency alone.

Furthermore, applying ecosystem theories helps us part ways with the instrumental approach to city logistics (Montabon, Pagell, and Wu 2016). City logistics researchers portray LSPs as outsiders in urban contexts, defining them through their relationship with their business partners, whom they often consider as mere “henchmen” (Wolf and Seuring 2010, 16),

and characterizing them solely within the business ecosystem (Lagorio, Pinto, and Golini 2017). It may seem that they are more closely tied to the city logistics ecosystem than to the urban ecosystem, and this perception is reinforced by most studies focusing on the interactions between logistics activities and urban stakeholders. However, viewing urban areas as social-ecological systems helps recognize that LSPs belong to cities. They constitute the structure of the urban ecosystem themselves, as they are a sub-ecosystem nested within the urban ecosystem. From this perspective, it is misleading to suggest that LSPs directly interact with city stakeholders, as doing so depicts LSPs as outsiders. Instead, they are members of an urban community. It is actually the city logistics ecosystem *leaders* who engage with the urban ecosystem by choosing to involve members of the LSP sub-ecosystem as *followers* within the city logistics ecosystem.

This article also emphasizes the role of LSPs in assisting public authorities in shaping the future of logistics within the urban ecosystem. Together, they identify ways to develop an urban ecosystem structure that supports both the sustainability and the resilience of the urban ecosystem, as well as the profit-oriented strategy of the city logistics ecosystem. 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 craft an urban ecosystem service that is profitable and tailored to the sustainability and resilience of the urban ecosystem. Applying ecological ecosystem theories to urban contexts also provides a better characterization of public authorities' sometimes counter-productive actions regarding city logistics. Indeed, most actions described in the literature appear to be aimed at constraining the LSP sub-ecosystem first (Dablanc 2022).

Although addressing the issue of polluting vehicles is essential (  mre,   lebi, and Koca, 2021), the environmental sustainability issues in city logistics activities mainly stem from the specific challenges LSPs encounter. These include consolidating the LSP leaders' goods within a single truck and the LSPs' 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 urban areas (Dablanc 2022), also appears disconnected from the reality that most goods stored in warehouses situated around urban areas never enter the city itself. Indeed, public authorities' lack of action in city logistics does not stem from a shortage of means of controlling the material flow within the urban ecosystem (Dablanc 2022). It is more about directing efforts toward the right targets.

The findings reveal that LSPs are not inherently opposed to urban constraints; rather, their survival is closely tied to the sustainability of urban ecosystems, where they function as a nested sub-ecosystem. Public authorities, particularly city logistics project managers, see no need to impose constraints on LSPs. 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 the LSP sub-ecosystem, who are motivated to work toward a better working environment.

Finally, this study explores the social context of city logistics from both business and ecological perspectives. This approach is rooted in the belief that complex supply chain issues, such as wicked problems, should not be approached from a reductionist viewpoint. Instead, it advocates for complex systemic thinking designed to examine the intricate context in which the wicked problem of city logistics is collectively addressed. To this end, a multilevel and interdisciplinary framework is established, suitable for the study of social system problems (George et al. 2016; Wieland 2021). Consequently, this study provides an understanding of sustainability as a dynamic, context-bound phenomenon. Within this framework, sustainable logistics not only relies on LSPs to adopt greener or innovative practices but goes beyond simple dyadic relationships.

The findings also apply to various SCM phenomena related to sustainability and other complex and systemic issues. Global supply chain practices and discourses are heavily influenced by nontraditional actors from social systems outside the supply chain (Shirgholami, Cole, and Aitken 2024), such as those within multistakeholder meta-organizations (Carmagnac, Touboullic, and Carbone 2022). Similarly, multi-tier and complex supply chains encounter strategic and organizational complexities that compromise their resilience, especially when adapting to sustainability needs from both environmental and social perspectives—whether these concerns are internal or affect wider societal and environmental concerns (Sarkis, Santibanez Gonzalez, and Koh 2019; Govindan, Shaw, and Majumdar 2021).

In general, we contend that ecosystem thinking enables researchers to explore complex issues, including responsibility for social or environmental misconduct and initiating changes in supply chain practices. This approach prioritizes adaptability, resilience, and sustainability, ultimately benefiting the ecosystem's members (Glaeser 2021; Preiser et al. 2018; Rodrigues, Ferreira, and Ferreira 2023). Indeed, authors draw on social-ecological system perspectives to illustrate how complex last-mile supply chains develop and benefit from resilience from a social (rather than technical) perspective in times of crisis (Lin et al. 2023).

6 | Conclusion

In this research, we provided an analysis of the role of the LSP sub-ecosystem nested within the urban ecosystem. Introducing the concept of the urban ecosystem to city logistics research and utilizing engaged and interpretive research methods, such as ethnography, has helped contribute to societal, theoretical, and managerial domains.

First, from a societal perspective, the adverse impacts of city logistics on urban sustainability are concerning, but the persistence of these issues despite extensive research is even more alarming. For decades, public authorities and industry stakeholders have collaborated to develop more sustainable transportation practices. Management researchers and managers have also tested innovative logistics approaches like crowd logistics. However, these solutions have not been effective on a scale large enough to tackle the “wicked problem” of logistics.

This article explores a novel approach to urban sustainability, arguing that an ecosystem perspective could significantly alter how SCM scholars view sustainability issues in logistics. We perceive these issues as a symptom of a deeper disconnection between urban and city logistics ecosystems, resulting in dysfunction within the LSP sub-ecosystem. Reconciling these two domains could lead to a reimagined concept of city logistics and shift the focus from optimization to emphasizing the role of city logistics as a nested sub-ecosystem integral to the structure of the urban ecosystem. Thus, we aspire for this article 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 article enhances the city logistics and SCM literature in several ways. A key contribution is offering scholars a different narrative of sustainable city logistics. Although city logistics can be viewed as a business ecosystem interacting with urban stakeholders, this perspective seemed overly restrictive based on field observations, particularly when considering sustainability. The more traditional, industry-centric approach fails to fully recognize that urban logistics actors are not merely interacting with urban stakeholders but form an integral part of the city and must be considered within their social context. By conceptualizing cities as social-ecological systems, we offer a more accurate representation of city logistics actors within their environment, thereby enriching the debate over sustainable city logistics with insights that extend beyond mere buyer-supplier or public-private relationships. As a result, this study advocates for a more holistic approach to sustainable logistics, emphasizing that sustainability is primarily a social system issue, not just a logistical challenge.

In terms of contributions to the SCM literature, this research draws on ecosystem theories to explore phenomena within a complex social context. In this way, the study helps chart an alternative path to the more traditional instrumental and linear approaches, offering an analysis that goes beyond dyadic and static views to encompass different levels of time and space. This approach recognizes that supply chains interact with—and have an impact on—places and actors beyond their immediate environment, influenced by a broader social context. By taking this approach, the article contributes to SCM by framing complex social system issues as best addressed collectively at the ecosystem level and illustrating why complex issues, such as the lack of sustainability, cannot be effectively addressed from a reductionist perspective. When explored holistically, it becomes clear that interconnected actors experience varying causes and effects related to a lack of sustainability. Therefore, studying the viability of a technical solution within a framework that only considers dyadic relationships will likely worsen the issue.

Thirdly, from a managerial perspective, this article aims to help reconcile urban communities on logistics and sustainability. We present testimonials from LSPs as members of the urban ecosystem and from public actors benefiting from partnering with LSPs. We hope these accounts encourage greater collaboration among urban actors. The research does not attempt to provide practitioners with a definitive guide on "how to craft sustainable city logistics." Instead, it suggests that practitioners can find

their own answers. Their approach should be twofold: collaborating on the core issues that affect the urban ecosystem's structure and prioritizing the identification of underlying problems beyond mere environmental sustainability.

Lastly, this study has limitations that lay the groundwork for future research on the connections between the city logistics ecosystem and the urban ecosystem. Owing to its qualitative nature, our work investigates city logistics in a specific context where public actors are driven by legislation to rapidly promote more sustainable cities. This situation has heightened tensions between the LSP sub-ecosystem and other urban sub-ecosystems. This research needs to be replicated in various settings, including underdeveloped and developing countries, where city logistics is structured differently (Mare   and Savy 2021).

Moreover, the transferability of an ethnography-based analysis to other contexts warrants consideration. To explore this aspect, there is a need to conduct this analysis in different contexts. We expect that these subsequent studies will provide new insights and enhance our understanding of the interactions between the city logistics ecosystem and the urban ecosystem, as well as the role of LSPs in reconciling sometimes conflicting objectives.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.