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Advancing Sustainable Urban Logistics: How Municipalities incorporate SMEs and Service Transport into Policy Frameworks

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Abstract

This paper examines how German cities account for the needs, requirements, and operating conditions of small and medium-sized enterprises (SMEs) in the development of urban logistics policies. Although SMEs are crucial actors in the context of rapidly evolving sustainable urban logistics strategies – ranging from cargo bikes and micro-depots to loading bays, delivery time windows and zero-emission zones – they often face disproportionate burdens when adapting to new regulatory frameworks and fleet electrification requirements. The study investigates to what extent municipal policy documents recognise these challenges and systematically integrate SME and service-logistics perspectives.

Methodologically, the paper employs a systematic document analysis of 22 Sustainable Urban Mobility Plans (SUMPs) and 27 Sustainable Urban Logistics Plans (SULPs) or comparable logistics strategies from German cities, using a keyword-based content analysis to assess the consideration of transport and logistics, service logistics and SMEs. The analysis is complemented by a case study of Hanover, combining the review of 19 regional and urban policy documents (18 analysed) supplemented by an expert interview with a city administration representative.

The results illustrate that while transport and logistics are widely addressed in SUMPs and SULPs, service logistics receives only moderate attention, and SMEs are often marginally accounted for or entirely absent in strategic considerations. No systematic relationship emerges between city size and the level of consideration of these topics, suggesting that local priorities, rather than scale, drive the degree of inclusion. The Hanover case confirms the limited attention paid to SMEs and 'just' urban logistics in formal documents but also reveals a more practical governance approach that actively involves SMEs through pilot projects, open and shared logistics infrastructure, as well as tailored administrative support. Overall, the findings point to a persistent gap between the central role of SMEs in urban freight and service transport and their weak institutional anchoring in strategic mobility and logistics planning, underscoring the need for more socially responsive and SME-sensitive urban logistics governance.

Keywords: Urban Logistics; Policy Development; SME; Service Transport

1 Introduction

European cities are increasingly taking commercial transport and urban freight into consideration in policy and practice, evolving from the city logistics concepts of the 2000s to today's sustainable urban logistics strategies, accelerating in importance since the 2010s. German cities alone have published nearly 50 urban and regional logistics concepts or similar strategic documents between 2012 and 2024, while numerous cities across Europe developed Sustainable Urban Logistics Plans (SULPs). Amongst others core measures include the use of cargo bikes, micro-depots, parcel lockers, loading zones and restricted delivery time windows (Assmann et al., 2024a & Iwan et al., 2016). Furthermore, the Netherlands introduced zero-emission zones in 18 major cities since January 2025, which aims to elevate the use of electric vans and trucks (Giaume, 2025 & van Gestel, 2025). Actors in last-mile logistics are becoming increasingly aware of the need to transition to more sustainable operating models (Plazier et al., 2024). Individual urban logistics measures have an impact on different actors within the market, especially SMEs (Assmann et al., 2024b). SMEs are crucial actors in the delivery and urban service transport sectors – with over 85% of last mile deliveries companies in the EU employing fewer than five people. SMEs are particularly affected by stringent environmental regulations, requiring them to transition their vehicle fleets towards electric fleets.

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This paper focuses on the key research question of how cities account for the needs, requirements, and operating conditions of SMEs when developing urban logistics policies. As part of this analysis, policy documents and strategic plans in Germany – such as Sustainable Urban Mobility Plans (SUMPs) (European Commission, 2021a & Difu, 2025) and SULPs (European Commission, 2024 & European Commission, 2021b & Osagie et al., 2024) –were systematically reviewed. This paper highlights the prominence and consideration of logistics as well as the explicit inclusion of SME's needs and roles in policy frameworks. A similar analysis was conducted specifically on policy document from the City of Hanover and the Hanover Region.

2 Methodology

The methodology involved a systematic selection and document analysis of German urban planning documents, focusing on SUMPs and SULPs. Different analytical approaches were applied, based on the document type. 22 SUMPs from various German cities were reviewed to assess how logistics, service transport, and SMEs are addressed, including related policy measures. The analysis of 27 SULPs – some not strictly defined as SULPs but addressing urban logistics – focused on the consideration of service logistics and SMEs, with plans varying in development level and local priorities. The documents were subjected to a keyword-based text analysis targeting four key areas: mobility, transportation, service logistics, and SMEs.

To comprehensively analyse the situation in one specific city, a dual approach combined the review of 19 policy documents from both Hanover City and Region with an expert interview which were conducted with administrative representatives. The document analysis followed a similar approach to the previous analysis of SULPs and SUMPs. The in-depth interview with a representative of Hanover's city administration provided insights into developments and current challenges in urban logistics, focusing on the integration and support of SMEs in policy development.

3 Results

The results of the analysis will be illustrated in three steps: First, we will present our findings regarding the analysis of German SUMPs. Thereafter we will show the results of our analysis on German SULPs. Finally, we will describe the results of our analysis of policy documents from both Hanover City and Region.

3.1 Results of analysis of German SUMPs

In total 22 SUMPs in various German cities were analysed (Figure 1). The development of SUMPs lies within the responsibility of the individual municipalities. It became clear that not all plans were developed according to the model of a SUMP, as envisoned by the European Commission (2021a)

The analysis assessed the extent to which key topics are considered, with a particular focus on transport and logistics, service logistics, and the role of SMEs. A keyword-based text analysis was used to detect relevant content across the documents. The results of the analysis are presented through maps, diagrams, and tables, as shown in the following figures.

Figure 2 illustrates the frequency with which the terms "transport and logistics," "service logistics," and "SMEs" (or related terminology) are mentioned in the analysed policy documents. The topic of transport and logistics is addressed in most of the documents, with only a small proportion omitting it entirely. A minor share of the policies refers to it implicitly. In contrast, service logistics is less prominently featured. While it is mentioned in more than half of the documents, approximately one third make no reference to it at all, indicating that this aspect of mobility is not yet fully integrated into policy considerations. Finally, SMEs are largely overlooked in mobility policies. Nearly three quarters of the analysed documents do not address their specific needs, despite the crucial role SMEs play in urban economies.

Figure 3 illustrates the extent to which various cities explicitly, implicitly, or not at all address the three thematic areas of "Transport and Logistics", "Service Logistics", and "SMEs". The colour-coding scheme applied is as follows: light green signifies explicit mention of the topic; yellow denotes implicit mention; and red indicates the topic is not mentioned. Only the city of Koblenz addresses all three topics simultaneously, thus holding a unique position. A majority of the cities, however, focused on only one or two of these areas. Notably, Transport and Logistics is considered in almost all cities, while Service Logistics and SMEs are addressed far less frequently. Around half of the cities that consider Transport and Logistics additionally address Service Logistics, either implicitly or explicitly, indicating some thematic overlap. On the other hand, only a few cities do not explicitly address any of the three topics. All cities refer to at least one of the thematic areas, either explicitly or implicitly. Overall, the degree of thematic consideration varies greatly: some cities set clear priorities, while others focus on selected aspects or omit certain topics entirely.

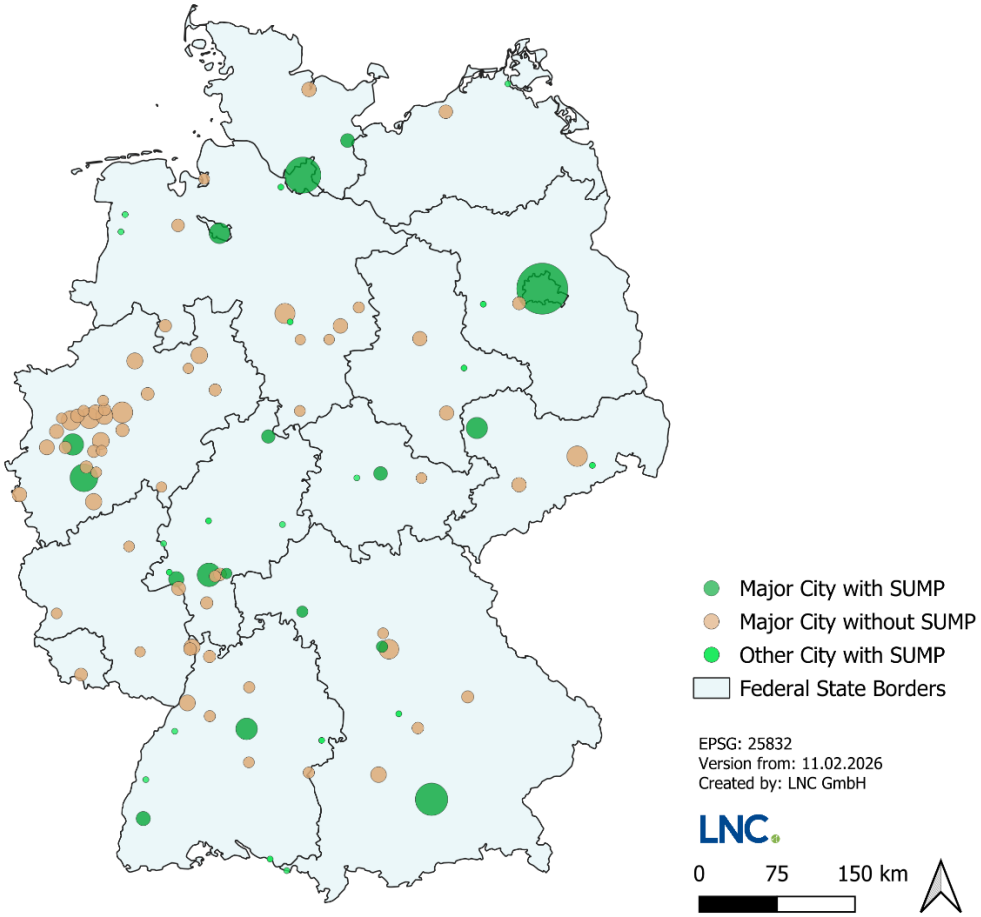

Fig. 1. Analysed SUMPs in German cities.

Fig. 2. Diagram illustrating references to transport and logistics, service logistics and SMEs in 22 Mobility Policies.

Fig. 3. Overview table of how 22 German SUMPs address transport and logistics, service logistics, and SMEs.

3.2 Results of analysis of German SULPs

As part of the analysis considering SULPs, 27 Sustainable Urban Logistics Plans (SULPs) from German cities were examined (Figure 4). Some of these policy documents are not explicitly labelled as SULPs, but nonetheless address the area of urban logistics. The analysed plans vary significantly regarding their level of development and structure, reflecting differing local priorities and approaches. The analysis focused on the extent to which service logistics and SMEs are considered within these documents. As with the analysis of the SUMPs, a keyword-based text analysis was conducted to identify relevant references and thematic focus areas within the SULPs. The findings are also presented in the form of maps, diagrams, and tables, offering a comparative overview of how these topics are addressed across the various SULPs. The figures are illustrated in the following.

Figure 5 illustrates how service logistics and SMEs are addressed in German SULPs. Service logistics is relatively well integrated into the policies. Nearly half of the documents mention it explicitly, and several others refer to it implicitly. Only a smaller share omits the topic entirely, suggesting that the operational aspects of service logistics are increasingly recognized in strategic planning.

In contrast, SMEs are considerably less present. Although some policies acknowledge them either explicitly or implicitly, nearly half make no mention of SMEs at all. This highlights a persistent oversight in logistics policymaking, where the specific needs and roles of small and medium-sized enterprises are not sufficiently considered.

Figure 6 illustrates the extent to which various cities explicitly, implicitly, or not at all address the two thematic areas of “Service Logistics” and “SMEs”. The colour-coding scheme used corresponds to that in Figure 3. While many cities explicitly or implicitly consider Service Logistics, the focus on SMEs is less prominent. SMEs are more often addressed implicitly or not at all. Six cities explicitly address both topics simultaneously, highlighting a thematic overlap between the two areas. Interestingly, some cities do not address either topic, while the majority incorporate at least one of the two. Overall, the thematic coverage is unevenly distributed, and cities tend to specialize in one of the two areas rather than adopting a holistic approach.

3.3 Results of analysis of Hanover policy documents

For the analysis of regional and urban policies in Hanover and the Hanover Region, policy documents were systematically selected based on their expected relevance to the topic of transport. In total, 19 policy concepts and plans, formulated by both the Hanover Region and the City of Hanover, were identified. Of these, 18 documents were incorporated into the analysis. The Municipal Land Use Plan was excluded, as the nature of this plan was deemed unsuitable for text-based analysis.

The results of the analysis are presented in Figure 7. The documents are organised chronologically by year of publication, with the most recent listed first, and subsequently by relevance. The colour-coding scheme applied in this figure is as follows: dark green indicates the topic is inherent to the document; light green signifies explicit mention of the topic; yellow denotes implicit mention; and red indicates the topic is not mentioned. The analysis was conducted using a keyword-based approach, employing German keywords, as all source documents are written in German.

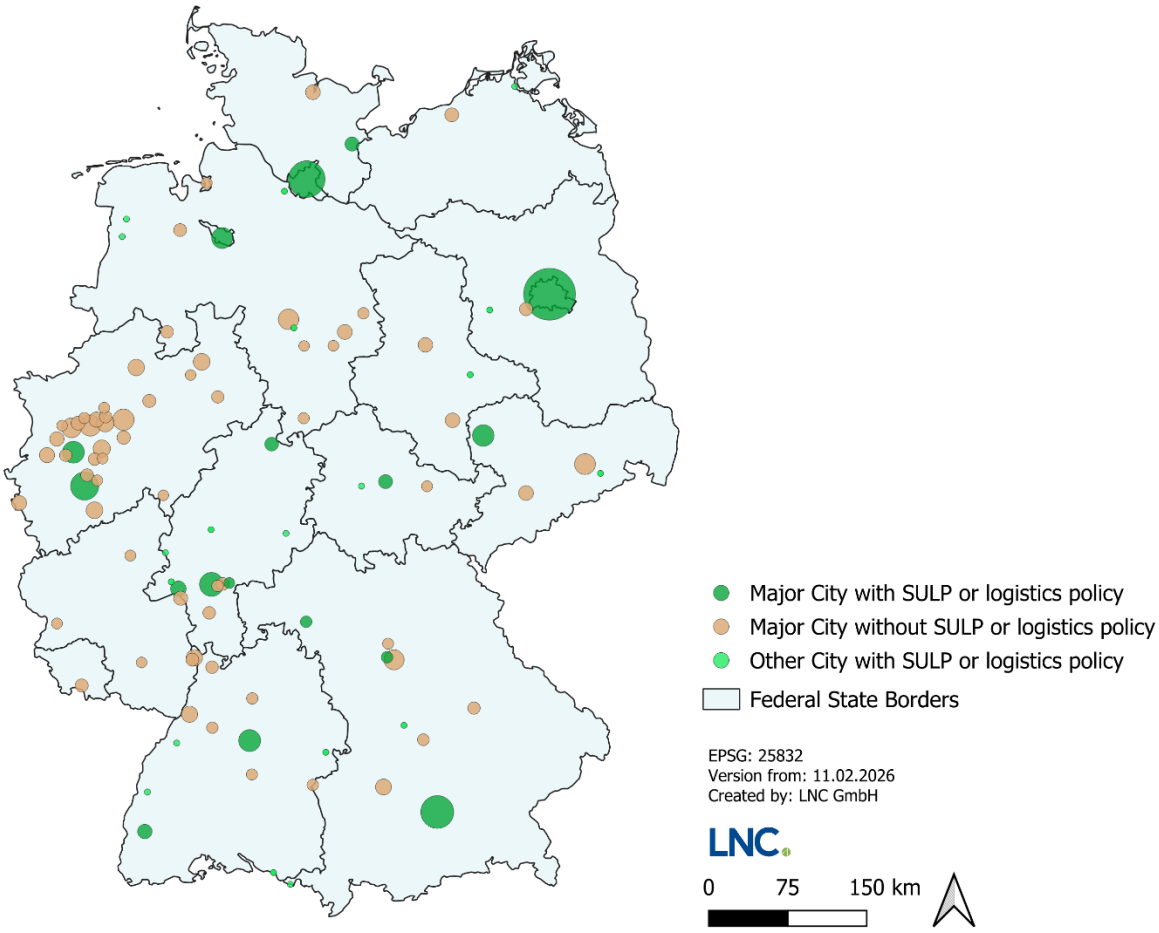

Fig. 4. Analysed SULPs and logistics policies in German cities.

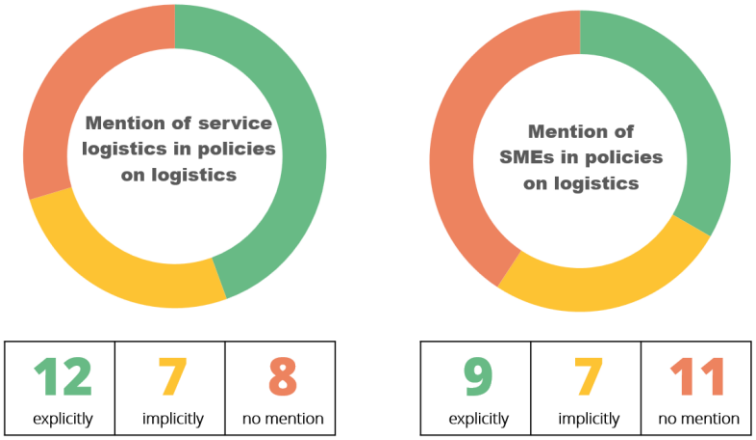

Fig. 5. Diagram illustrating references to service logistics and SMEs in 27 logistics policies

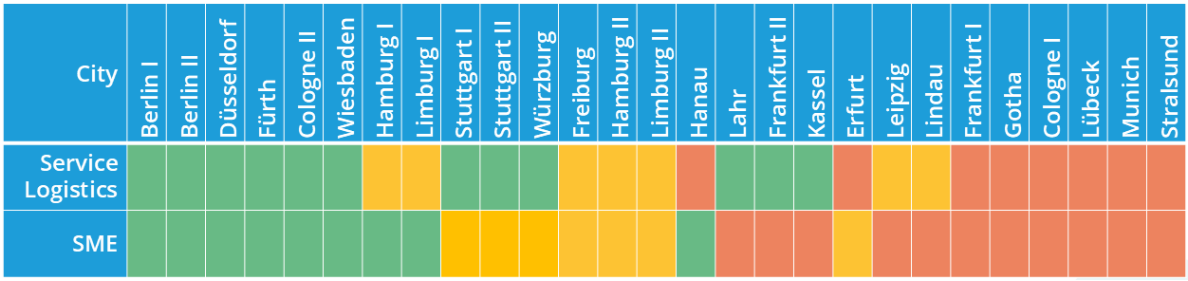

Fig. 6. Overview table of how 27 German SULPs address service logistics and SMEs

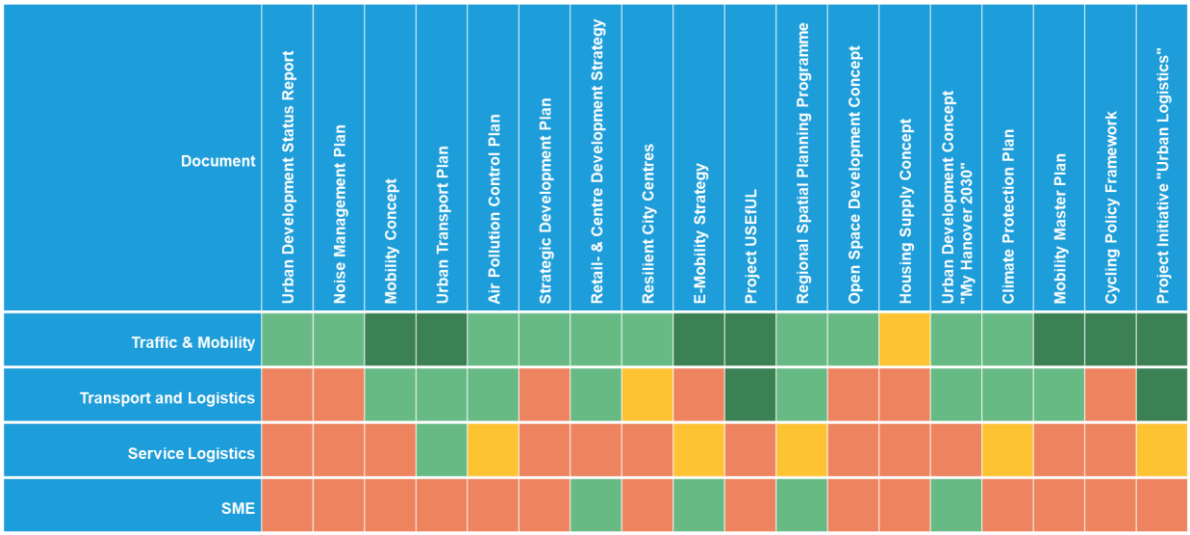

Fig. 7. Consideration of logistics and SMEs in analysed Hanover policy documents

The analysis of transport-related regional and urban policies demonstrates that issues of traffic and mobility are referenced in all examined documents, although only one document addresses these issues implicitly. This outcome is expected, given that the selection criteria for documents were based on their presumed relevance to the subject matter.

The more narrowly defined topic of transport and logistics was addressed in more than half of the analysed documents and was inherent to two urban logistics projects. Service logistics, by contrast, was explicitly mentioned in only one document. Five additional documents referred to service logistics implicitly, while the vast majority of documents did not mention this topic at all. Only four of the analysed documents explicitly referenced SMEs, whereas the remaining documents did not include any mention of SMEs.

In addition to the analysis of the above-mentioned topics, the text analysis was further extended to encompass the concept of “just” urban logistics. Appropriate keywords were selected to facilitate this analysis. The results of the analysis indicate that only one document explicitly referenced the concept of justice; however, this reference referred to mobility in general rather than to urban logistics in particular. Another document addressed the concept implicitly, referring to the notion of environmentally just mobility. Notably, the topic of just urban logistics was not addressed in any of the documents reviewed, and no connection to SMEs was identified.

To underline the findings from the document analysis, one interview has been conducted with a representative from the city of Hanover who also has insights into other areas of the administration that address SMEs and urban logistics. A detailed analysis of the conducted interview follows.

Over the past 15 years, the City of Hanover has systematically developed institutional expertise in urban logistics as part of its planning and urban development agenda. Building on early city logistics initiatives from the 2000s, the city has maintained continuity in addressing evolving urban freight and service mobility challenges. Its strategy combines policy development, pilot projects, and collaboration with local businesses - particularly SMEs - to enhance sustainable and efficient city logistics.

A cornerstone of Hanover’s approach is its effort to integrate local and regional SMEs into urban logistics activities and procurement processes. The city explicitly aims to balance large corporate participation with the inclusion of SMEs. This focus on local SMEs reflects both an economic policy objective - to strengthen regional value creation - and a practical one, as smaller firms often develop innovative and flexible logistics solutions suited to urban environments.

Hanover’s urban logistics policy is not purely regulatory; the city actively acts both as facilitator and implementing partner in selected projects. However, this dual role is also subject to internal critique, as the city

sometimes assumes responsibilities beyond its traditional mandate. Three measures are considered key policy achievements:

- The introduction of the new traffic sign VZ230[2] in model districts, facilitating better allocation and regulation of loading zones.
- The promotion of open, vendor-neutral parcel locker and storage box systems to safeguard fair access to public space.
- The establishment of micro and mini logistics hubs in central areas, accessible to multiple operators and adaptable to evolving mobility needs.

Beyond these prominent interventions, Hanover integrates logistics-oriented considerations into its daily operations - such as heavy vehicle traffic control, weight restrictions, and time-limited delivery access in inner-city areas. Proposals for more rigorous environmental access rules, such as limiting pedestrian zone entry to electric vehicles, have been discussed but not implemented due to legal uncertainties.

Hanover's engagement with SMEs in urban logistics is multifaceted. The city acknowledges that national and local initiatives often remain dominated by large logistics players with greater resources. Nonetheless, SMEs have made notable contributions, particularly in supplier-neutral locker infrastructure and niche logistics services that complement mainstream processes. Public procurement guidelines emphasise SME participation, and regional framework laws - such as Lower Saxony's SME Promotion Act - reinforce this priority. The city acts as a contact and "sparring partner" for SMEs, offering feedback opportunities and encouraging dialogue. It also participates in professional networks, which serve as channels for knowledge transfer and identification of capable SMEs. Since SMEs and startups often lack familiarity with administrative procedures, Hanover helps bridge this gap by sharing expertise and pointing smaller firms towards procurement opportunities.

Major challenges for SMEs include the limited access to large volumes, data, and interfaces - factors that impede their ability to compete with global logistics providers. Nevertheless, the city notes that it maintains strong communication pathways with SMEs, who tend to proactively seek contact when opportunities arise.

Hanover's urban logistics strategy extends beyond parcel and freight transport. The city also addresses service traffic, encompassing ride-pooling, care services, craftspeople mobility, and broader service-related trips. Projects under the USEfUL initiative - such as "Share & Care" - explored whether ride-sharing concepts could improve efficiency in care and crafts sectors by reducing vehicle numbers, trip distances, and parking demand. Although promising results were found theoretically, practical implementation remains ongoing.

Digitalisation and dedicated parking solutions for service providers form another focus area. The city has fully digitised its craftsperson parking permit system, simplifying access to urban work sites. Model districts with flexible delivery zones, open to multiple economic actors, have displayed a positive response.

Although momentum around urban logistics occasionally wanes, the city continues to engage actively - both independently and through its membership in the municipal working group for urban logistics. For Hanover, a "fair" as well as "green and just" logistics policy requires the balancing of social, economic, and environmental sustainability pillars through transparency and stakeholder participation.

Complementary actors such as chambers of commerce, trade associations, and business networks further support SMEs. A continued emphasis is placed on stakeholder dialogues, education, and digital integration as enabling factors for an inclusive and resilient urban logistics governance.

3.4 Results summary

The analysis of SUMPs and SULPs reveals that transport and logistics are consistently included across most urban strategies, while service logistics, particularly the needs of service traffic such as craftspeople and maintenance providers, receive only moderate attention. Although SULPs perform slightly better in this regard than SUMPs, the overall integration remains limited. Strengthening the role of service transport in urban planning is essential to ensure functioning urban supply and infrastructure maintenance, especially in dense urban environments.

Interestingly, the analysis did not reveal any correlation between the size of the city and the degree to which these topics are addressed. This finding indicates that the integration of service logistics and SME-related issues depends more on local policy priorities than on urban scale.

The Hanover document analysis depicts that all of the examined policies address transport and mobility – mostly explicitly – however only about half address transport and logistics topics, and few documents directly mention service logistics or SMEs. It is important to note that the concept of just urban logistics is almost completely absent from current policy discourse. Measures related to transport and mobility are common, but those specifically focusing on logistics or the integration of SMEs are rare.

The interview with an administrative representative of Hanover reveals that the city has developed strong expertise in urban logistics, combining targeted policies, pilot projects, and close collaboration with local SMEs.

[2] VZ230 is a German traffic sign under the Road Traffic Regulations (StVO) marking a loading zone, permitting stopping and parking solely for loading/unloading.

Its strategy promotes fair access, sustainable freight flows, and innovation through measures like improved loading zones, open parcel lockers, and shared logistics hubs. The city supports SMEs by simplifying procurement, fostering dialogue, and integrating them into exchange with logistics networks.

4 Discussion and outlook

Overall, the analysis highlights a need for stronger integration and clearer policy focus on SMEs and service logistics in urban mobility strategies, to ensure that the needs of small businesses and service providers are adequately reflected in future planning , thereby contributing to a more just and green urban logistics system. As urban logistics becomes more complex and impacting with additional regulations, municipalities must find the right balance and set the right goals (CBRE, 2024).

By analysing the consideration of SMEs and service transport in municipal policy development, this work focuses on socially responsible urban logistics and its impact on society, particularly on small and medium-sized enterprises.

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References

Assmann, T., Fassnacht, L., Gade, A., Kuchenbecker, M., & Stiehm, S. (2024a). Urbaner Umschlag und Logistikknoten. In *Radlogistik: Grundlagen zu Logistik und Wirtschaftsverkehr mit Lasten- und Transporträdern* (127-154). Wiesbaden: Springer Fachmedien.

Assmann, T., Mayregger, P., & Klauenberg, J. (2024b). Akteurskreis und Akteursmanagement. In *Radlogistik: Grundlagen zu Logistik und Wirtschaftsverkehr mit Lasten- und Transporträdern* (251-268). Wiesbaden: Springer Fachmedien.

CBRE. (2024). Urban logistics: clear regulations crucial. Retrieved from https://www.cbre.com/insights/viewpoints/urban-logistics-clear-regulations-crucial

Difu. (2025). Sustainable Urban Mobility Plans (SUMPs) in German municipalities. Retrieved from https://difu.de/projekte/sustainable-urban-mobility-plans-sumps-in-deutschen-kommunen

European Commission. (2021a). *Sustainable and Smart Mobility Strategy: Putting European transport on track for the future* (Mobility and Transport, COM(2020) 789 final). Brussels: Directorate-General for Mobility and Transport. Retrieved from https://transport.ec.europa.eu/document/download/be22d311-4a07-4c29-8b72-d6d255846069_en

European Commission. (2021b). *Recommendations on urban logistics: Accelerated deployment of innovative sustainable solutions* (Expert Group on Urban Mobility, subgroup 4). Brussels: Directorate-General for Mobility and Transport. Retrieved from https://transport.ec.europa.eu/document/download/b818ff86-2463-4949-9413-d3ca559f60b9_en

European Commission. (2024). Sustainable Urban Logistics Plans (SULPs). Retrieved from https://transport.ec.europa.eu/document/download/b818ff86-2463-4949-9413-d3ca559f60b9_en

Giaume, C. (2025). The Netherlands leads Europe's transition to zero-emission freight. Retrieved from https://urban-mobility-observatory.transport.ec.europa.eu/news-events/news/netherlands-leads-europes-transition-zero-emission-freight-2025-10-20_en

Iwan, S., Kijewska, K., & Lemke, J. (2016). Analysis of Parcel Lockers' Efficiency as the Last Mile Delivery Solution – The Results of the Research in Poland. *Transportation Research Procedia, 12*, 644–655. https://www.sciencedirect.com/science/article/pii/S2352146516306305

Osagie, S. A., Giaretta, M., Gammelgaard, B., et al. (2024). Sustainable urban logistics: A global review of solutions and best practices. *Transportation Research Interdisciplinary Perspectives, 23*. https://www.sciencedirect.com/science/article/pii/S2590198224001908

Plazier, P., Rauws, W., Neef, R., & Buijs, P. (2024). Towards sustainable last-mile logistics? Investigating the role of cooperation, regulation, and innovation in scenarios for 2035. *Research in Transportation Business & Management*, *56*, 101198.

van Gestel, B. (2025). Zero emission zones in 2025: these cities are joining and this is what you need to know as an entrepreneur. Retrieved from https://www.basworld.com/en/content/zero-emission-zones-in-2025-these-cities-are-joining-and-this-is-what-you-need-to-know-as-an-entrepreneur