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Missions as relational scales of agency: urban leverage for transformative change

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ABSTRACT

The mission-oriented innovation policy literature has recently attempted to address implementation challenges and identified research needs around the role of cities, scales and agency in implementation. We address these gaps and contribute to the literature, particularly on the spatial governance of mission-oriented innovation policies, through an integrated theoretical framework conceptualising missions as relational scales of agency. A case study of the mobility as a service (MaaS) concept in Finland enables us to identify and discuss scalar tensions related to MaaS failures. We conceptualise those as leverage points for transformative change that underscore the potential of urban policies in integrated transformative mission implementation.

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1. Introduction

The recent shift in science, technology and innovation policy towards transformative innovation aims to address complex societal challenges through directionality. The goal is to transform entire socio-technical systems towards desired, jointly decided goals (Schot & Steinmueller, 2018). This approach has also reintroduced the concept of missions, reminiscent of the US's Apollo space missions of the 1960s, aiming to address broader societal wicked problems such as climate change, poverty and healthcare challenges, which are fundamentally different from previous technological missions (Mazzucato, 2018). These broad transformative missions should provide direction for joint action spanning actors, sectors and scales. In addition to directionality, their key characteristics include cross-sectoral scope, flexible target-setting around structural transformation and systemic change, involving a wide range of stakeholders, and experimental and ambitious goals encompassing the supply and demand sides (Edler et al., 2025).

However, undertaking transformative missions has proved challenging and prompted scholarly research to tackle the implementation gap. Identified challenges include questions of democratic legitimacy, the need to define and maintain focus in the face of competing forces and interests, and the overall complexity and ambiguity of governance (e.g., Wanzenböck et al., 2020). In theory, it is widely recognised that the straightforward reasoning of the traditional linear model of innovation policy, which moves from research and development to commercialisation, is not suitable to describe today's transformative mission-oriented innovation policies (MOIPs). In practice, however, the risk that MOIPs continue to address complex societal challenges solely as technological issues persists (Flanagan et al., 2023). These approaches often fail to account for the systemic and complex social and economic factors at play, and have been criticised for not recognising the relational and interactive nature of innovation (e.g., Schot & Steinmueller, 2018; Wanzenböck et al., 2020). A significant challenge is the tendency to overlook spatial and scalar variations, treating issues as if they were universally applicable (Flanagan, 2025; Uyarra et al., 2025).

As a result, an increasing number of scholars have recognised the lack of focus on spatial aspects in the literature of MOIP and transformative innovation policy. They have begun to scrutinise the roles cities and

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regions play in addressing implementation challenges (Brett et al., 2023; Hansen et al., 2024; Henderson et al., 2024; Mouthaan et al., 2024; Uyarra et al., 2025). The potential of cities and regions in this context is linked to the recognised need to effectively leverage user innovation and the locally embedded knowledge of individuals operating at the level of everyday challenges (Henderson et al., 2024; Uyarra et al., 2025; Wanzböck et al., 2020). Additionally, cities have the potential to serve as platforms for learning, experimentation and policy integration (Kalliomäki et al., 2024; Stead & Meijers, 2009; Wolfram et al., 2016). Urban governance and planning are increasingly recognised as essential leverage points for transformative change (McCormick et al., 2013). A key additional challenge is the lack of connection to transformative agency. Several authors have contributed to this effort to bridge the gap by exploring concepts such as missions as boundary objects, which highlight their connective elements and shared meanings (Janssen et al., 2023), micro-missions (Henderson et al., 2024), and the governance frameworks used by public organisations to implement transformative goals in practice (Janssen et al., 2025). The MOIP literature highlights the importance of focusing on the agency and coordination aspects of missions (Janssen et al., 2023). It also emphasises the need to better understand the tensions that may hold generative potential for creative local responses (Henderson et al., 2024).

Our attempt to theorise the issues surrounding the roles of cities, scales and agency is informed by scalar theories in human geography. The implementation of transformative MOIP is linked to the critical mass of transformative agency present in cities, which can be effectively harnessed through integrated urban policy and governance. Cities operate at the intersection of horizontal and vertical policies, as well as various sectoral and scalar interests, creating opportunities for integrated policymaking. We enhance scalar theorising by conceptualising missions as relational scales of agency. Doing so improves our understanding of the role of cities – and particularly urban policy – in the implementation of MOIPs. We contend that viewing these issues through a relational scalar lens facilitates fostering transformative agency within cities, as it connects mission-oriented efforts to shared agendas.

We primarily draw from the literature on human geography and the identified need to advance relational scalar theory in order to more accurately reflect the interconnected and multiscalar nature of socio-spatial relationships (e.g., Grillitsch et al., 2025; Prytherch, 2007; Springer, 2014). This contribution aims to enrich the ongoing debate on the spatial implementation and governance of MOIPs, which have only recently begun to appreciate the value of a scalar perspective (e.g., Brett et al., 2023; Mouthaan et al., 2024; Uyarra et al., 2025). The concept of scale, which is inherently horizontal when viewed as a level of organisation, is also deeply intertwined with vertical and hierarchical theories (Marston et al., 2005). This dual perspective may provide both conceptual and practical benefits for the implementation of MOIPs and their spatial governance. It can be especially helpful in understanding and analysing the geography of missions and studying ‘tensions around the spatial organisation of missions’. Additionally, it highlights the important role scale can play in the legitimacy and implementation of missions (Mouthaan et al., 2024, p. 13).

The current research attempts to answer the following research questions: How can conceptualising missions as relational scales of agency contribute to (1) advancing spatial legitimacy and governance of missions and (2) mitigating and harnessing the scalar tensions emerging from transformative mission implementation? The study illustrates why transformative innovation policies should incorporate the scalar aspects inherent to spatialised processes of policy formation and implementation. It does so by focusing on the role of cities as everyday environments of transformative agents, including companies, citizens, user innovators, and policymakers, and the role of urban policy and governance in leveraging systemic change through integration and mediation. The article employs a practice-theoretical perspective to underscore the perspective of transformative agency at the centre of the change processes and practices of socio-spatial systems.

We use an illustrative case regarding the implementation challenges affecting the transformative mission initiative, mobility as a service (MaaS) in Finland. This case sheds light on the role of urban policymakers and other key actors in cities navigating a multiscalar and multi-actor operational environment characterised by various scalar tensions and mismatches, challenging mission implementation. We base our analysis primarily on literature analysis and interviews. The methods are explained in the empirical section of the paper.

The paper proceeds as follows. We next present theoretical discussions on scale to understand the relevant dimensions of the concept. We also address the need for a relational reading of scale. We pay particular attention to the attempts to understand the intersections of vertical and horizontal organisation of spatial

policymaking, as well as the integrative and inclusive potential of spatial policies in more efficient MOIP implementation. It is here, we argue, that the role of cities and regions is critical and underexplored. We utilise Moore's (2008) conceptualisation of scales as a category of practice, and connect it to recent theorising on agency (Grillitsch et al., 2025) and urban transformations (Wolfram et al., 2016), building a basis for our theoretical framework on missions as relational scales of agency. Next, we discuss and analyse various tensions emerging from the MaaS case. We then consider those tensions as leverage points for transformative change. Finally, we discuss the contributions and implications of the paper in theoretical and practical terms. We focus on the opportunities and limitations relating to leveraging cities' transformative potential associated with the relational approach to scale.

2. Theoretical framework: a scalar perspective of MOIP

In this section we develop our theoretical framework by building on the recently identified research gaps in the MOIP literature. Those gaps highlight the need to better understand the role of cities, scales, and agency in addressing mission implementation challenges.

2.1. Theorising scale relationally

Human geographers have debated the concept of scale and its significance for many years (e.g., Grillitsch et al., 2025; Jonas, 2006; Marston et al., 2005; Moore, 2008; Springer, 2014; see Prytherch, 2007, for a helpful summary of the scale debate). That research tends to view the concept of scale as fundamentally spatial. Initially, notions of scale were associated with territorial and absolute understandings of space as container-like, as evidenced by references to 'material socio-spatial entities' and 'scalar fixes' (Moore, 2008, pp. 204–205). That perspective captures various levels of human organisation. Later, as discussions shifted towards the relational and networked organisation of spatial relations, geographers began to focus on concepts such as 'processes of scale making, rescaling and the politics of scale' (Moore, 2008, p. 204), human geography without hierarchy (Springer, 2014), and how a scalar perspective on transitions could help understand their spatiality and territorial embeddedness (Coenen et al., 2012). Recently, an agentic perspective has been introduced to the scale debate, viewing actors as active participants in the processes of rescaling (Grillitsch et al., 2025).

Debates among geographers on rescaling reflect shifts in socio-spatial organising and related changes in power dynamics (e.g., Brenner, 1999; Grillitsch et al., 2025). Those discussions are connected to topical debates about MOIP implementation and legitimation, and the need to direct attention to the role of cities and transformative agency in systemic policy implementation; 'rescaling is not just happening to actors, but actors engage intentionally and purposefully in rescaling processes' (Grillitsch et al., 2025, p. 4). The extent to which the MOIP literature currently addresses geographical specificities and local competencies is questionable, and the gap between MOIPs and regional innovation efforts has been described as surprisingly wide (Uyarra et al., 2025). Uyarra et al. (2025, p. 219) contend that 'the spatial and scalar dimensions of transformative missions have been neglected. The local level is key, given that it is where the new responses to the great challenges of society are experienced'.

Recently, more researchers have addressed scalar aspects in the context of missions, dealing, for instance, with the economics of mission-oriented policy, the scale of problems and solutions, the coordination of directionality, and mission legitimation (e.g., Brett et al., 2023; Bugge et al., 2022; Mouthaan et al., 2024; Uyarra et al., 2025; Wanzenböck et al., 2020). Harvey (2012, p. 69) asserted that 'in some sense "hierarchical" forms of organisation are needed to address large-scale problems'. One aspect deals with finding the right scale to implement missions, a multifaceted issue influenced by factors such as the nature of the problem, the scope and purpose of the mission, economies of scale, and the actors and interests involved (e.g., Mazzucato, 2021; Mouthaan et al., 2024; Wanzenböck et al., 2020). Recent papers conceptualise scale as a multilevel and dynamic phenomenon, dealing with collaboration across various governance levels and related political processes (Flanagan et al., 2023; Grillitsch et al., 2025; Mouthaan et al., 2024; Priebe & Herberg, 2024; Uyarra et al., 2025; Wanzenböck et al., 2020). It is seen as changing in line with geographical, institutional, and technological shifts, allowing adaptation to systemic changes and balancing local and global problem framings (Brett et al., 2023; Grillitsch et al.,

2025). Furthermore, scale is understood as a socially constructed concept applied strategically in policy debates to align policies with the multiscale nature of sustainability transitions, helping to legitimise policies and ensure effective coordination across levels (Mouthaan et al., 2024). The approach has spawned a relational scalar view in recent discussions.

The interaction between federal or national and regional levels is seen as crucial during mission implementation when regions are both contexts and agents in innovation policy (Priebe & Herberg, 2024). The same applies to cities, as they are both contexts for MOIP implementation containing the critical mass of actors and often provide the economies of scale needed to catalyse transformative change. Additionally, they can also serve as agents of transformative urban policy, governance, and planning, which are increasingly identified as key leverage points for transformative change (McCormick et al., 2013; Wolfram et al., 2016). Furthermore, 'cities and regions are major nodes in wider networks of actors that may simultaneously develop their local resources and access and influence resources at different spatial scales' (Coenen et al., 2012, p. 976). Understanding problems as being socially constructed with a place dimension can help translate missions into specific public and private demand (Flanagan, 2025) and generate creative place-based responses to scalar tensions (Henderson et al., 2024; Mouthaan et al., 2024). State and public sector actors play multiple roles in trade-offs between place-specificity and scaling-up, building coherent networks versus bridging diverse ones, and applying regulations or allowing experimentation (Flanagan et al., 2023). Effective mission implementation thus builds on transformative legitimacy (Braams et al., 2021), which necessitates the state and public sector playing a strong role in defining and implementing missions at different scales (Janssen et al., 2023).

Tensions often arise through interactions and their absence among different actors within and between scales. In sustainability and transition literatures, such tensions are discussed as leverage points – a concept originally introduced by Meadows (1999) – referring to points within complex systems where underlying tensions and contradictions become visible and can serve as triggers for systemic transformation. The literature draws a clear distinction between shallow and deep leverage points within complex systems (e.g., Abson et al., 2017). Shallow leverage points, such as parameters, material flows and feedback, are relatively easy to adjust; however, their influence on the system as a whole is limited and often short-term. In contrast, deep leverage points, particularly those concerning system intent, rules, and paradigms, are much more challenging to alter; yet they hold the greatest potential for enabling genuine systemic transformation. Recognising and strategically handling leverage points, particularly those associated with deeply embedded paradigms, rules or narratives, enables actors to address tensions constructively, thereby fostering conditions for transformative change (Abson et al., 2017; Leventon et al., 2021). Accordingly, the identification and management of tensions are central to both discovering leverage points and enabling meaningful change.

Scalar theorising can be useful in analysing tensions arising from mission implementation (Mouthaan et al., 2024). Within the complex and systemic operational environment, many authors see scales for organising as a useful lens 'through which to think about and act upon change' (Jonas, 2006, p. 404; Mouthaan et al., 2024; Uyarra et al., 2025). That view is maintained despite foundational problems identified in the literature associated with scalar ontology assuming the ontological existence of scales (Marston et al., 2005; Prytherch, 2007). Yet scalar theorising must advance from a more relational and systemic perspective (e.g., Grillitsch et al., 2025; Prytherch, 2007; Springer, 2014), including in the context of MOIPs. Considering the plea for an inclusive approach to mission implementation (Mazzucato, 2018) and a better recognition of territorial perspectives and the geography of missions (e.g., Hansen et al., 2024; Mouthaan et al., 2024; Uyarra et al., 2025), an increasingly topical question relates to the need to fully comprehend 'the intersecting spatial politics of vertical and horizontal sociospatial relations' (Moore, 2008, p. 205), typically coordinated through spatial policies (Stead & Meijers, 2009).

Directing attention to the processes and practices of socio-spatial restructuring and change at the centre of MOIP implementation could facilitate a more inclusive, networked, and relational interpretation of missions and 'a more inclusive (and less formally "political") view of the social production of scale' (Prytherch, 2007, p. 464). The current article offers a way to approach missions through the routine socio-spatial organisation of mission-oriented practices and agency. That involves presenting a practice-theoretical approach to conceptualising scale as a category of practice (Moore, 2008; see Moore's summary of geographers' approaches to scale and the problems inherent to scalar theorising). Considering the need to approach

urban practices and processes in MOIP implementation from a multilevel governance perspective, scales should be approached relationally:

The very ‘scale’ of contemporary urban spaces and economies in which they are embedded ought to get us thinking about scale, not vertically or horizontally, but relationally in terms of a volumetric, networked, space of flows. The relative scale of spatial forms and processes might therefore be rethought as constituted relationally through interconnectedness, and as spaces that structure (and are structured by) the flows they channel. Overall, we need to think about scale less as a space (a thing) and more as a socially constructed spatial structure or spatiality of networked geographical things or processes (a system).

(Prytherch, 2007, p. 458)

2.2. Missions as relational scales of agency

It can be productive to conceptualise missions as networked systems of spatial relations where vertical and horizontal organising intersect. Doing so enables the integration of strategic direction with grassroots transformative actions, which in turn fosters inclusive, integrated mission delivery and helps bridge the implementation gap. A practice–theoretical perspective also underscores the perspective of agency at the centre of processes and practices of socio-spatial change, referring to intentional and purposeful actions agents take to activate that change (Grillitsch & Sotarauta, 2020), operationalising mission directionality in arenas of contestation and negotiation (Janssen et al., 2023). The notion of mission as a boundary object (Janssen et al., 2023), and a kind of relational scalar fix, has the potential to steer individual and collective agency towards joint direction.

Nevertheless, achieving missions by rescaling implementation to cities is easier said than done (Uyarra et al., 2025). Reasons include the messiness and complexity of policy mixes and their downscaling, not to mention the difficulties in scaling lessons and innovations from pilots and experiments (Trischler et al., 2023). In these processes, scales take different forms. They might, for example, function as arenas for relational mission-oriented agency, not only for policymakers who are active in, and represent, multiple scales but also for citizens and users whose points of reference are functionally and territorially embedded in their daily lives, for instance, through sustainable mobility services.

This section delineates the theoretical framework of the article concerning missions as relational scales of agency (Figure 1). This framework enhances the relational scalar theorisation within the MOIP literature by utilising Moore’s (2008) conceptualisation of scales as a category of practice. Moreover, it associates this conceptualisation with contemporary scalar theories concerning agency (Grillitsch et al., 2025) and urban transformations (Wolfram et al., 2016). Moore’s conceptualisation provides a valuable framework for examining missions through the quotidian socio-spatial organisation of mission-oriented practices and agency. It also serves as a lens through which to understanding the world, differentiating between scale as a category of practice and scale as a category of analysis. The upcoming case study focuses on

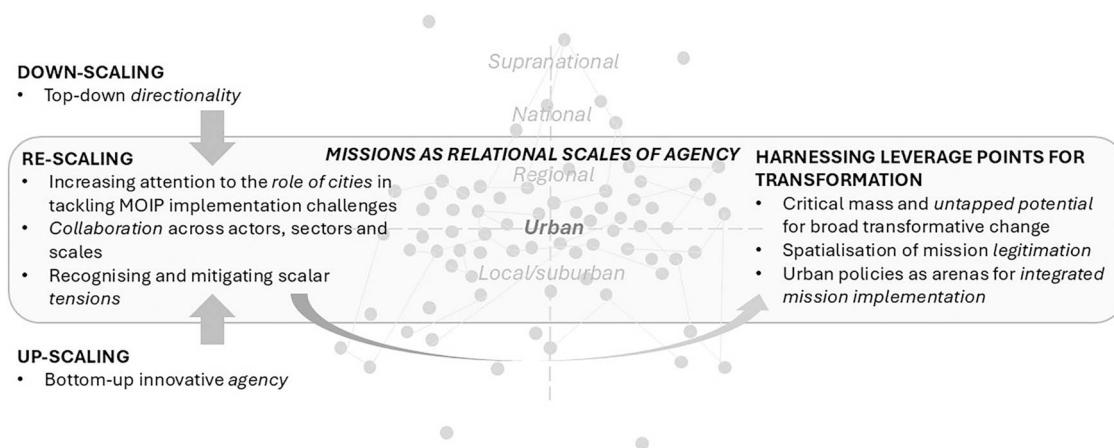


Figure 1. Theoretical framework: missions as relational scales of agency, and the untapped potential of cities in integrated transformative policy implementation.

the intersecting spatial politics of horizontal and vertical relations, the agency of actors engaged in mission-oriented practices, and the integration of sectoral and scalar dimensions within the spatialised processes of mission implementation and legitimisation. We emphasise their synergies and potential for integration (cf. Coenen et al., 2012). Additionally, we examine the scalar tensions arising from the MaaS case, which serve as valuable frameworks for critically analysing lessons pertinent to the continued advancement of MOIP development. The tensions identified serve as critical leverage points for facilitating transformative systems change, thereby offering a framework for the development of both our theoretical and practical implications.

In the framework, the density of points at the centre refers to the critical mass of actors operating in and in connection with cities that must be connected to missions to catalyse change. Mission goals and their operationalisation have to be legitimised through practices and the agency of this critical mass. Hence, the spatialisation of mission legitimisation in this context refers to connecting missions to spatial policies and practices. By operating at the intersections of vertical and horizontal policymaking, urban policies can serve as arenas for integrated, territorially embedded mission implementation. The left-hand side of the framework illustrates the need to rescale MOIPs to the level of urban policymaking, which is essential to tackle the complex implementation challenges. That requires effective governance and the mitigation of scalar tensions and mismatches, which serve as leverage points for transformative change (right-hand side) and collaboration across scales. In this context, downscaling refers to operationalising the governance of directionality at the level of urban policy and governance to align with the scale of problems and solutions (Mouthaan et al., 2024). Upscaling, in contrast, refers to those practices related to harnessing bottom-up innovative agency at the grassroots level, involving innovative entrepreneurship and place-based leadership (Grillitsch & Sotarauta, 2020).

3. Role of cities in systemic policy implementation: illustrative case of the MaaS

This section illustrates the importance of cities and urban policy in systemic policy implementation in a sustainable mobility context that continues to present one of the key challenges in urban environments. The illustrative case regarding the implementation challenges of the MaaS concept in Finland illustrates the crucial role of policymakers and other key actors connected to cities in navigating a multiscale and multi-actor operational environment. After presenting the materials and methods of the study and MaaS as a transformative mission initiative, we address the scalar tensions and mismatches arising from case analysis.

3.1. Materials and methods

The case analysis combines insights from previously published empirical research on MaaS in Finland (Audouin & Finger, 2018; Hirschhorn et al., 2019; Kivimaa & Torrens, 2025; Lajas & Macário, 2020; Li & Voegelé, 2017; Pangbourne et al., 2020). It also incorporates interview data collected from 2023 to 2025 to analyse MOIP implementation in Finland, the operational environment of smart mobility, and the implementation of MaaS in the Helsinki metropolitan region during the period 2015–24. In addition, other materials, such as the Finnish Traffic Data Ecosystem's meeting recordings and policy documents concerning mobility authored by the Finnish Ministry of Transport and Communications (LVM), were utilised. In total, 16 complementary interviews were conducted with 17 interviewees (see Table A1 in Appendix A in the supplemental data online for a more detailed description of the data). The respondents came from various organisations involved in MOIP and/or MaaS design and implementation, in either its past or present form. The interviewees were selected owing to their expertise in relevant topics. The interviews followed a semi-structured interview protocol, where relevant interview questions were set, yet the discussion facilitated eliciting the interviewees' knowledge.

The analysis employed a theory-informed abductive approach, an iterative process involving repeated engagement with both literature and data (Van Hulst & Visser, 2025). This method is particularly suited to addressing unexpected findings and tensions during research (Van Hulst & Visser, 2025). The preliminary review of relevant theories guided the identification of key themes related to scalar thinking, agency, and the role of cities in mission implementation. Existing theory provided the initial codes of downscaling,

rescaling and upscaling, and they were applied when designing the case study and data collection, which led to the selection of MaaS as the case. The first round of interviews and analysis utilising these codes revealed that tensions were a recurring theme in challenges related to MaaS implementation. The discovery obliged the authors to revisit the literature and to conduct further interviews. The data were subsequently re-examined with tensions in the relational scalar context serving as the analytical lens. This approach revealed the tensions in MaaS implementation, which led to their further categorisation as scalar tensions and mismatches between public and private value, directionality and agency, diverse temporalities, strategy and practice, and sectoral and spatial policy. These will be elaborated upon in the empirical section below.

3.2. MaaS as a transformative mission initiative

The MaaS concept integrates various private and public transport services from different providers to create a single, unified service. MaaS is defined as ‘a user-centric mobility distribution model in which all mobility services are aggregated by an operator and supplied to users through a single digital platform’ (van den Berg et al., 2022, p. 203). The concept can take many forms, ranging from basic services such as route planners and travel information to more advanced platforms incorporating booking, payment, and pricing for multiple modes of transport into a single, user-friendly application (Kostiainen & Tuominen, 2019).

MaaS serves as an illustrative example of an approach to tackling complex and transformative sustainable mobility missions while addressing related challenges. Transforming the transport sector is a vital component of achieving sustainable development. The current system remains heavily dependent on private car use and fossil fuels, underscoring the urgent need for innovative mobility solutions (Li & Voegelé, 2017). Transport planning, regulation and everyday mobility habits have become so deeply embedded that the system is locked into inefficient practices that are difficult to change. However, emerging solutions such as digitalisation and servitisation offer promising alternatives (Kostiainen & Tuominen, 2019).

MaaS first attracted attention in Helsinki in the 2010s when MaaS Global, a Finnish company, launched its Whim App, which was presented as the first MaaS solution in the world (Audouin & Finger, 2018; Li & Voegelé, 2017). MaaS’s goals are aligned with the Finnish government’s decision to cut greenhouse gas emissions from domestic transportation by 2030, and the government played a significant role in initiating MaaS (Kivimaa & Torrens, 2025). MaaS is also at the heart of the European Union’s (EU) mission on Climate-Neutral and Smart Cities. It adopts a cross-sectoral and demand-led approach to resolving sustainable

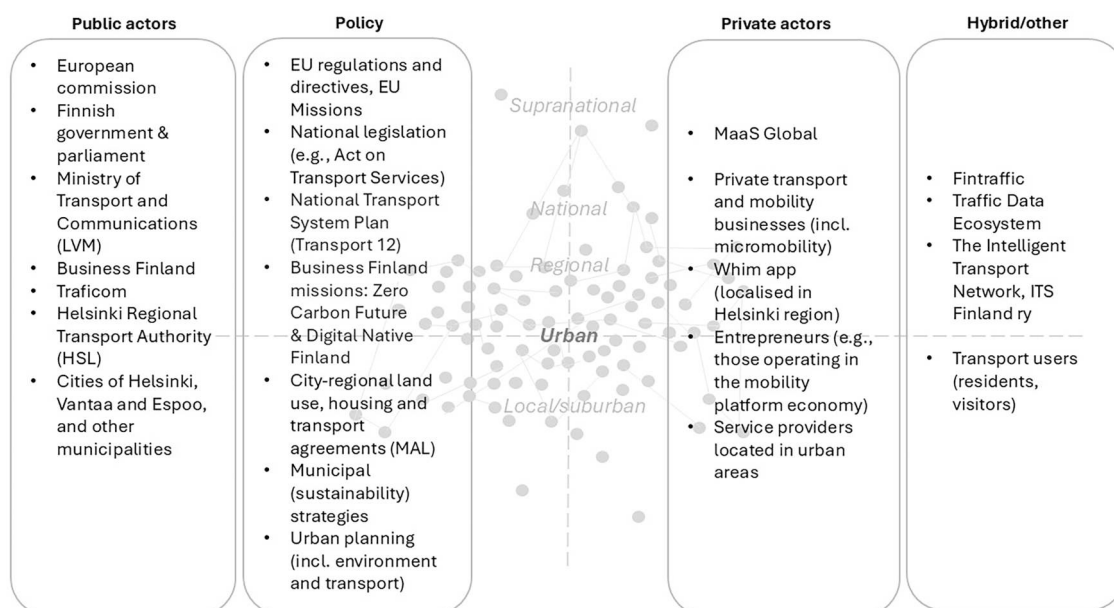


Figure 2. Mobility as a service (MaaS) as a relational scale of agency.

mobility challenges (European Commission, 2024). Furthermore, sustainable mobility is a key focus of Business Finland's missions related to Zero Carbon Future and Digital Native Finland (Business Finland, 2024). The complex ecosystem of sectors, actors and policies involved in MaaS across various scales is illustrated with examples in Figure 2, which, as a whole, presents MaaS as a relational scale of agency.

The examination of MaaS is significant as it reveals the proactive involvement of the state in tackling societal challenges through experimentation and the collaborative development of a collective vision that engages a diverse array of stakeholders (Kivimaa & Rogge, 2022). This process, notwithstanding the various identified tensions, can illuminate critical leverage points for transformation. Furthermore, its multifaceted nature renders it an exemplary case for enhancing the understanding of how to navigate and implement missions effectively. The national policy framework supporting the establishment of MaaS in Finland originated in 2009, marked by the initiation of the inaugural intelligent transport strategy orchestrated by the LVM (Ministry of Transport and Communications, 2009). Policy development continued throughout the decade, and during the period 2015–16, LVM, in collaboration with the Finnish Funding Agency for Innovation, Tekes (the predecessor of the present Business Finland), allocated approximately €5.5 million to 31 projects, which included the development of the Whim app (Lajas & Macário, 2020). A significant policy milestone was the enactment of the Act on Transport Services in 2018. This legislation aimed to enhance customer-oriented transport services, facilitate market access, and promote the interoperability of various components within the transport system. While not explicitly defined as a mission, MaaS exhibits numerous salient characteristics akin to transformative missions, attributable to its disruptive nature. Those characteristics include an emphasis on systemic change, alongside a commitment to experimentation and learning (Kivimaa & Rogge, 2022).

Kivimaa and Torrens (2025) demonstrate how MaaS in Finland has fostered directionality, particularly in national-level policymaking, driven by six pivotal factors: visioning, experimentation, networking, intermediation, institutional change and contestation. A shared vision for MaaS was co-developed by public- and private-sector actors (e.g., LVM, Tekes and the Intelligent Transport Network, ITS Finland ry) and refined in policy experiment projects. What were initially overarching and ambiguous ideas of sustainable transport were gradually shaped through collaboration, laying the groundwork for cross-sectoral cooperation and a more directional national innovation policy (Kivimaa & Torrens, 2025). Kivimaa and Torrens explain that although the process was largely consensual, it faced resistance from taxi operators and public transport providers. Additionally, not everyone in the ministries supported the MaaS agenda, and disagreements also emerged over the choice of policy instruments. Crucially, 'directionality and vision-building have thus far mainly happened on the national level and by national-level actors, often with international markets in sight. However, the local city level, where day-to-day mobility gets realized, has been excluded' (Kivimaa & Torrens, 2025, p. 252). Next, we extend the analysis in relation to the theoretical framework and identified tensions in MaaS implementation.

3.3. Scalar tensions and mismatches in MaaS implementation

3.3.1. Tensions in public–private value creation

As MaaS addresses the integration of different forms of private and public transport into a single service, there are diverse options for organising MaaS business models (e.g., van den Berg et al., 2022). The most frequently mentioned issues with MaaS implementation in Helsinki in the interviews were the difficulties in the business modelling and with market revenue. While the national legislation was developing at the time to support increased mobility service integration (interviews 7, 10, 13, 16) (Könnölä et al., 2021), providing top-down support for mobility innovations such as MaaS, the horizontal coordination in the ecosystem lacked common operation practices and financial incentives. The issues reflected a fragmented ecosystem marked by a lack of clarity and tensions around public and private value creation and pricing and customer (data) ownership, for example (interviews 7, 10, 12, 13, 14, 16) (Karlsson et al., 2020; Pangbourne et al., 2020).

The shared vision created at the national level did not, therefore effectively transfer to the operational level, illustrating the scalar mismatch resulting from the exclusion of input from the city level in operationalising directionality. That was surprising given that the City of Helsinki was an active player in developing strategies for intelligent mobility in cooperation with the business sector. Furthermore, implementing MaaS

in the metropolitan area required the participation of the Helsinki Regional Transport Authority, HSL, which receives half its funding from municipalities in the Helsinki region and half from ticket revenue, but the relationship was tense. The Finnish Transport and Communications Agency, Traficom, penalised HSL for not following the new transport service law (Kivimaa & Torrens, 2025). Although this issue was resolved (Kivimaa & Torrens, 2025), politically, the implementation of MaaS was hindered by a lack of clarity on the roles of public- and private-sector actors, the absence of a shared vision, and collaboration issues (Kostiainen & Tuominen, 2019). These tensions were evident in the different perspectives arising from our data:

[Public transport] is an activity produced with tax money, so there can be no such situation where tax money is paying for start-up companies' business activities and covers the costs; it is self-evident.

(interview 7)

I think there is still a lack of discussion and alignment in how the public and private transport are, after all, part of the same entity, and should be made to make use of each other without the jealous fear that what if the customer buys the ticket from another outlet. If the customer buys the ticket nevertheless, what does it matter?

(interview 10)

Despite securing substantial external investment funding, MaaS Global filed for bankruptcy in 2024. Existing market structures and the absence of effective incentives can slow collaborative value creation and hinder the overall progress of MaaS (Kostiainen & Tuominen, 2019). Ensuring service profitability and generating sufficient demand remain key challenges. If MaaS fails to offer clear added value or cost savings to users, it risks remaining a niche solution and private car use will continue to dominate (interview 16). In addition, other systemic tensions between public and private value were identified: While increased walking and cycling would benefit public health, restricting vehicles such as electric scooters for this purpose could negatively impact companies and their innovative efforts to advance sustainable mobility (interview 15).

3.3.2. Directionality–agency mismatch

In addition to the mismatch between national legislative renewal and ecosystem development, a previous study comparing three MaaS pilot cases implemented in Amsterdam (the Netherlands), Birmingham (UK) and Helsinki (Hirschhorn et al., 2019) revealed that, in the Finnish case, the government's role was limited to ensuring the proper functioning of free market forces. In contrast, the Dutch government took a more hands-on approach, using its political influence and economic power to steer the direction of its MaaS pilot schemes. Similarly, Könnölä et al. (2021) examined the evolution of Finnish transport legislation and found that market self-regulation led to suboptimal operating models and a decline in user satisfaction with service quality. They proposed transformative governance to enhance the ecosystem's capacity to respond to changing needs.

MaaS was struggling to operate in its place of origin as the situation in Helsinki made it difficult to continue attracting investors, highlighting the importance of a city-level and city-regional operational coordination and mission-oriented agency in such complex, sustainability-oriented innovation (interviews 13, 14). Some interviewees suggested the situation could be improved with stronger public investment and leadership and sufficient regulatory system support (interviews 3, 9, 13, 14), and others felt that at least the relationship between public and private actors should be more clearly defined (interviews 8, 9, 12) (Karlsson et al., 2020). A mismatch between directionality and agency, therefore, manifests at the intersection of horizontal and vertical policies in the failure to harness the agency in the scattered bottom-up urban and city-regional ecosystem of MaaS through too narrow operationalisation of directionality vertically (Kivimaa & Torrens, 2025).

It's already challenging enough to reach a consensus on basic issues – such as how many highways and parking lots we need, whether to support mass transportation, or where cycling paths might be useful. If we can't agree on these fundamental matters, then deciding on more complex initiatives [such as MaaS] becomes an even bigger task. What are the shared goals we want to pursue?

(interview 16)

Interviewees commonly mentioned that MaaS was hindered by the complex ecosystem of actors, including competitive structures and co-development. To ease the burdens of individual organisations and adapt to

new EU regulations, stakeholders established a voluntary forum named the Traffic Data Ecosystem to enable dialogue between traffic and transport actors, and it currently has around 200 members in Finland. Fintraffic coordinates the ecosystem, which has 'agreed on rules and routines for effectively sharing data between operators, coordinating different services, or seamlessly connecting the devices used by vehicles, infrastructure, service providers and customers' (Fintraffic, 2024). Several interviewees mentioned forums like this ecosystem. The platform offers useful support for navigating the complexity by facilitating dialogue. They raised diverse partnerships and agreement-based policies, such as carbon neutrality roadmaps, sustainable urban mobility plans and city-regional land use, housing and transport agreements (the agreements between the state and the largest urban regions), into discussion as key tools for operationalising high-level mission objectives and coordinating and integrating various organisational, sectoral and scalar interests at city and city-regional levels (interview 14).

3.3.3. Temporal mismatch

Researchers have referred to Helsinki's MaaS experience as being at the forefront of MaaS design and implementation (e.g., Lajas & Macário, 2020; Li & Voegelé, 2017). Globally, MaaS still awaits large-scale adoption, yet interest in the concept has not diminished (interviews 3, 13, 14). Although some form of MaaS operates in various cities around the world, and several MaaS pilots have been run with positive outcomes, the progress from pilots to large-scale implementation has thus far been slow (Karlsson et al., 2020; Nikitas et al., 2024). Several interviewees (interviews 3–5, 11, 13, 14) reported that, despite good intentions, these one-time pilots are problematic in the sense that there is often no learning and continuum, and it is quite rare for them to become embedded as a new way of operation in the long run.

Moreover, different operational time horizons between, for instance, mobility start-ups and urban planners challenge joint efforts and would require new tools for collaboration (interview 14). Further, in terms of timing issues in the ecosystem (interviews 3, 5, 6), one challenge with MaaS in Finland was that all operators should have been included in the operating ecosystem at the same time. That condition came about because Finnish cities have large established public transport operators, and excluding any one of them would undermine the service offering required for MaaS to succeed. The ecosystem was not ready for a completely new cooperative operating logic, and, despite working in the same field, the organisations had their own goals and motivations (Pangbourne et al., 2020). In addition, at the time, the data provided by different actors that are necessary for MaaS was not as compatible and integrated as it is today (interviews 8, 9). The lack of data sharing in the ecosystem has been identified as 'the largest single inhibiting factor for shared directionality' among transport market actors in Helsinki (Könnölä et al., 2021, p. 8). The COVID-19 pandemic also played a role in slowing public transport development and revenue generation.

It also became apparent that the existing urban structure is not ideal for services such as MaaS. Mission-oriented planning would require considerable time to become effective and would have to be complemented by a reshaping of the current infrastructure (interviews 7, 13). Nevertheless, the interviewees considered planning a valuable tool for operationalizing long-term mission objectives (interview 14), which demand broad commitment to drive systemic change. Overall, this information underscores the need for sustained planning efforts in cities to promote mission-orientation. As one interviewee put it, 'I don't think the idea [of MaaS] is dead at all, the question is just when it will happen. ... Perhaps the ecosystem just wasn't ... It's always this problem if it takes off at the right time' (interview 3). Furthermore, social and behavioural challenges arise from people's attachment to private car ownership and scepticism of new services (interviews 7, 16) (Kostiainen & Tuominen, 2019). Behavioural change and the development of infrastructure and urban structures progress at different rates, and without user acceptance, MaaS cannot succeed.

3.3.4. Strategy–practice mismatch

The analysis also reveals a mismatch between strategies and practices. The intelligent transport strategy, launched by the LVM in 2009, was considered the first of its kind globally to cover intelligent transport systems nationwide (Lajas & Macário, 2020; Ministry of Transport and Communications, 2009). It guided policy development throughout the 2010s. The Transport Revolution programme, initiated in the early 2010s, aimed to foster 'a new mind-set for urban and transport planning, policies, and policy implementation' (Tuominen & Kanner, 2011, p. 1), and was followed by a second intelligent transport strategy in 2013. One of the current key documents is the National Transport System Plan (Transport 12) for 2021–32,

which is also regarded as a high-quality strategy. However, its connection to practical implementation is considered weak:

Finland has very ambitious policy programs ... such as the Transport 12 plan, but the operational link to the strategy and program is nonexistent. In other words, we make these kinds of surface strategies with a lot of resources, and no one directs what it means, like what it means in practical steps on the operational level, what the actors need to do and how the resources and support programs are directed there.

(interview 10)

Similarly, missions may seem easy to agree upon partly due to their malleability: even when the mission's goal is clearly defined, the specific actions required are often open to interpretation (interviews 3, 13, 14), which creates a disconnect between various scales of mission implementation. This, in turn, points towards a need for a more relational approach to the spatial governance of missions. For users, citizens, and other stakeholders, a mission without a clear use case and tangible objectives can lack visibility in everyday life and hinder mission-oriented agency (interviews 6, 13, 16). Furthermore, excessive regulation and the creation of rigid systems or monopolies can hinder innovation, scaling, and the adoption of new mobility solutions. The situation illustrates the need to balance system support and regulation (interviews 11, 12) (Pangbourne et al., 2020).

Absolutely, mission-oriented governance may play a role in that [horizontal coordination of MaaS in cities], if it is not too loosely defined. What we are currently missing here is the use case that nobody dares to resolve. What does [the mission] mean in practice?

(interview 13)

3.3.5. Sectoral–spatial policy mismatch

Several interviewees raised the role of urban planning and policies for MaaS from various perspectives. The informants acknowledged the essential role of cities as stakeholders in MaaS owing to their connections with entities engaged in transportation and mobility. Cities also supply the essential critical mass of both services and consumers necessary for the establishment of integrated public transport systems (interviews 5, 8, 9, 12, 15, 16). Moreover, urban planning significantly influences the facilitation or obstruction of the integration of mobility services within the urban framework (interviews 7, 9, 13, 14). The challenges that MaaS systems and sustainable urban and mobility initiatives must address are specific and directly relevant to citizens, necessitating practical solutions, such as reliable and pleasant daily commuting, and reduced pollution in urban environments (interviews 7, 10, 12, 13, 16). Urban areas can guide mobility and transportation stakeholders towards these objectives by restricting private vehicle usage or elevating parking fees in specific regions, contingent upon the presence of political will and intent (interviews 7, 12, 13).

In addition, cities pursue multiple urban policy objectives that intersect with mobility, including social equity, sustainability, and the creation of liveable and attractive urban environments (interviews 12, 15, 16) (Pangbourne et al., 2020). They also facilitate broad ecosystem-based partnerships to support collective mission-orientation (interviews 14, 15). When discussing the role of public actors and the connection between transport, social policy, and the market-based logic of MaaS, interviewees (12, 14) emphasised that:

In the end, it's about the price of transport. ... How do we make it viable for people with lower incomes, students, or people with lower-paying jobs, whose job description often demands physical attendance in the workplace?

(interview 12)

The observation highlights the importance of addressing the socio-economic dimension of urban transport policy and mission legitimation in MaaS. A shared vision, dialogue and effective communication between sectors and actors regarding their goals and overlapping interests were seen as essential for integrating the mission into operational activities at the city level (interview 15). Strategic prioritisation in urban policy also has a significant role, signalling top management's commitment to selected issues:

The silos are doing important work on their own. But when a cross-sectoral initiative like this emerges, it's crucial to establish clear, shared goals to prevent it [the mission] from becoming disconnected. Each sector's primary objective should be identified, along with how it aligns with the mission. For some, it's reducing greenhouse gas emissions; for others, it's enhancing mobility for the elderly, promoting learning, or supporting mental health.

Bringing these priorities together is of utmost importance.

(interview 15)

For example, the roles of different urban actors and end locations could be further considered in the development of mobility solutions. As people move from place to place and from one service to another, functional mobility becomes relevant to service providers – even if mobility is not their primary area of operation (interviews 15, 16). In this way, the broader system can be more effectively supported in working towards shared goals by linking core functions to mission objectives.

The interview data provide diverse scalar, sectoral and spatial perspectives on urban mobility and MaaS. According to Pangbourne et al. (2020), developing MaaS in isolation from broader urban policy objectives may lead to unintended consequences and blind spots, such as concerns over data privacy, the risk of MaaS providers forming monopolies that escalate prices and reduce service quality, limited access to digital services deepening transport inequality, and an overall increase in traffic and unnecessary trips. It is worth remembering that ‘MaaS is not fully referenced in strategic urban plans and so may not be shaped to better internalise transport’s effects, and this strategic omission permits uncritical thinking about MaaS if it is promoted in isolation from wider urban objectives’ (Pangbourne et al., 2020, p. 47).

Considering the spatial nature of the issues mentioned above and the crucial role of urban policy in addressing them, more effective spatial governance through mission-oriented policies and planning could help integrate multiple scalar and sectoral perspectives. An integrative approach may overcome siloed structures and strengthen the connection to the operational level by enhancing systemic understanding (interviews 6, 10, 12–15) (Priebe & Herberg, 2024; Uyarra et al., 2025). Furthermore, even when expertise is available, empowering mission-oriented agency across diverse policy sectors requires time and financial resources to instil change (interviews 14–16).

4. Discussion: an integrated urban policy leveraging cities’ transformative potential

The MaaS case demonstrates the usefulness of a scalar perspective in studying ‘tensions around the spatial organisation of missions’ and the spatial aspects of mission implementation (Mouthaan et al., 2024, p. 13). Urban and regional actors play crucial roles in resolving scalar tensions through place-based responses (Henderson et al., 2024) and strategic prioritisation of transformative leverage points. We synthesise and discuss the five identified tensions and mismatches that illustrate diverse implementation challenges and can advance the understanding of both the role of scalar issues and urban policy in MOIP implementation (Table 1). This is also important when discussing transformative leverage points for systemic change in terms of policy and practice. Abson et al. (2017) assert that much of the sustainability research and policy has focused on relatively shallow leverage points. Our framework highlights the transformative potential of deep leverage points by showing that identifying and acting on scalar tensions and mismatches strategically can catalyse systemic change. The identified tensions and mismatches partially overlap, yet for analytical clarity, we discuss them separately. Collectively, they can be used to indicate a theoretical and practical direction towards integrated urban policies for transformative missions that are needed to advance spatial governance and legitimation of systemic change. The case also offers several valuable lessons for contemporary MOIPs faced with challenges similar to those encountered during the MaaS implementation, such as advancing systemic mobility solutions.

Altogether, the potential of urban policy to mitigate tensions and mismatches in sectoral policy integration and mission-oriented governance, as well as to leverage their transformative potential, appears underexplored and underutilised. To date, insufficient attention has been paid to the potential role of cities in mission implementation (Uyarra et al., 2025, p. 223). However, urban policymakers, faced with idealised assumptions about their abilities and options to downscale mission objectives (p. 224), should be supported by stronger value-based steering that incentivises, legitimises, and promotes systemic change through effective tools (cf. Mouthaan et al., 2024). Urban actors and policymakers are close to citizens’ and user innovators’ daily challenges, and thus occupy a key position in bridging top-down direction-setting and bottom-up agency, which can assist in bringing about behavioural change (Janssen et al., 2025; Trischler et al., 2023) via a relational approach to mission governance. National governments could also mitigate those tensions and support system change (Braams et al., 2021). That might involve partnerships and

Table 1. Scalar tensions and their transformative potential as leverage points.

Identified tension	Predictions from existing literature	Transformative potential as leverage points
Public–private value	<ul style="list-style-type: none"> A mismatch between public and private value creation signals the need for public steering sufficiently strong to realise mission-oriented market creation based on joint values (Flanagan et al., 2023; Pangbourne et al., 2020). That would involve urban actors in rescaling, which in the MaaS case was not successful. Governance potential is hampered by framing MaaS primarily as a private-sector business opportunity, given that the consequences reach well beyond mobility' (Pangbourne et al., 2020, p. 47). Worldwide, MaaS implementation has been beset by a lack of clarity and tensions in public–private value creation. In addition, insufficient public-sector financial intervention for mobility innovation systems support continues to dilute sustainable mobility solutions. This highlights the need for stronger value-based public steering that, in turn, necessitates an inclusive approach to MOIP design and implementation, given the need to balance economic, environmental and social sustainability (Mazzucato, 2018) 	<ul style="list-style-type: none"> This tension is a leverage point for strengthening public steering and shared values across scales, while addressing system intent and paradigms with the greatest transformative potential (Abson et al., 2017). It calls for a shift from viewing mobility as a private business opportunity to framing it as a public value-driven mission, prioritising societal goals over market logic. Realising this requires an integrated urban policy as a platform for multilevel coordination and spatial governance, underscoring cities' active role and leadership in negotiating a shared direction Without clear public guidance and value alignment, MaaS remains fragmented, fails to scale and wastes public resources on isolated pilots
Directionality–agency	<ul style="list-style-type: none"> A mismatch emerges at the intersection of vertical and horizontal policies. Top-down directionality and its governance vertically do not yet meet the broad horizontal operational environment. This gap is evident in the breadth and depth of bottom-up agency, willingness and versatile expertise organised around MaaS and the voluntary traffic data ecosystem, which highlights the presence of will, both individual and collective agency, and place-based leadership to push systemic change (cf. Grillitsch et al., 2025). Several partnership and agreement-based policies coordinated by cities demonstrate potential. They have potential to extend directionality horizontally. However, to date, mission-oriented steering appears too narrow vertically. It is incapable of leveraging transformative change in a horizontally multi-actor operational environment (cf. Wolfram et al., 2016) 	<ul style="list-style-type: none"> This tension is a leverage point for bridging national direction with local agency. The mismatch between top-down directionality and horizontal, multi-actor agency is not just a coordination issue but a significant leverage point at the level of system design and self-organisation (Abson et al., 2017) Transformative change relies on creating governance structures that align vertical priorities with local capacity, reconfiguring who participates and how decisions are made. Empowering cities and involving users ensures missions are operationalised at the scale of everyday practice, fostering commitment and user-centred MaaS development If direction and agency remain misaligned, mission implementation will fail
Temporal	<ul style="list-style-type: none"> A mismatch between policy support and innovative solution emerged from the case as the challenge-driven approach in MaaS was in many ways ahead of its time, lacking appropriate policy frameworks and institutional and societal support for systemic change (cf. Mouthaan et al., 2024), referring also to a partial mismatch in the problem–solution space (Wanzenböck et al., 2020). The timing challenge in MaaS and the different time horizons of various public and private actors underscore the need for new collaboration tools and a coordinated approach joining actors relationally from diverse sectors, organisations and scales. Goals related to short-term piloting and long-term transformation in sustainable mobility systems are also misaligned, highlighting the need for new approaches and perseverance to support systemic change 	<ul style="list-style-type: none"> This tension is a leverage point for aligning timescales and feedback loops across actors and scales. The temporal mismatch between policy support and MaaS innovation is more than just a timing issue: it combines high transformative potential through joint goal-setting with mid-level leverage via delays and feedback structures (Abson et al., 2017; Meadows, 1999) Long-term planning and continuity flowing from pilot schemes into practice help establish innovations, and thus foster systemic change and widespread adoption. Strategic interventions should, therefore, focus on synchronising time horizons and feedback, for example, through spatial planning that bridges short-term pilots and long-term transformation (Kalliomäki et al., 2024) If temporal tensions are ignored, resources and expertise will be wasted on short-lived projects
Strategy–practice	<ul style="list-style-type: none"> Scalar tension in MOIP implementation is also clearly evident in the strategy–practice mismatch. Although several ambitious transportation strategies operated at the national level that were considered forerunners in the field, they did not benefit MaaS implementation in practice owing to the lack of connection between strategies and their operationalisation. A disconnect between the operationalisation of MaaS at a city-regional level and national strategising on sustainable and smart mobility hindered successful implementation (cf. Uyarra et al., 2025; Pangbourne et al., 2020) 	<ul style="list-style-type: none"> The leverage point lies in the potential to strengthen the link between strategy and practice. This mismatch reflects not just failed operationalisation but misaligned system goals and information flows (Abson et al., 2017) Transformative potential rests on improving those flows. That entails addressing who knows what, when and how, and realigning goals across system levels to foster systemic learning and adaptation. Strengthening the link between strategy and practice requires empowering cities through genuine decentralisation of decision-making, resource allocation and learning If strategies are not operationalised, change will remain superficial or fail to materialise

(Continued)

Table 1. Continued.

Identified tension	Predictions from existing literature	Transformative potential as leverage points
Sectoral–spatial policy	<ul style="list-style-type: none"> The inherent MaaS challenges related to sectoral and scalar integration (manifesting, for instance, in tensions between transportation planning and spatial implementation of sustainable mobility through integrative urban policy) indicate that the potential of spatial policies and planning as arenas for integrated policymaking and interest mediation is yet to be fully explored and harnessed in MOIP implementation. Strategies that draw on expertise in integrated planning (Stead & Meijers, 2009; Kalliomäki et al., 2024) support more effective and legitimate spatial governance by aligning diverse organisational, sectoral and scalar interests (Priebe & Herberg, 2024; Uyerra et al., 2025) 	<ul style="list-style-type: none"> This tension is a leverage point for mission-oriented spatial policy and planning to integrate sectoral and scalar interests Such planning represents a significant leverage point that can fundamentally reshape the intent, design and paradigms of urban governance (Abson et al., 2017) If policies remain siloed, holistic change and service integration are blocked, leaving MaaS isolated from broader urban policy goals

Note: MaaS, mobility as a service; MOIP, mission-oriented innovation policy.

agreement-based urban policies covering multilevel coordination and stakeholder engagement. Furthermore, it is important to establish a democratic basis for directionality, which involves rethinking political processes, enhancing citizen and stakeholder engagement, and balancing long- and short-term interests. These findings signal the need for the spatialisation of mission legitimisation and the need to better understand and legitimate the role of cities in systemic policy implementation, especially concerning their integrative and transformative potential.

In this context, the relational scalar approach refers primarily to urban policy and governance, bringing together actors across scales, sectors, organisations, and communities to advance a joint purpose. Effective urban policy requires a coordinated agency embedded in all levels of the multilevel governance system. MOIP implementation demands a balance between fixity and fluidity of missions, a tension that can be mitigated by taking a practice-theoretical approach to viewing missions as a fluid relational scale of practical agency as opposed to merely a fixed scale of policy. Stakeholders across diverse policy levels will be required to collaborate and coordinate if urban innovation policies are to have a notable impact and catalyse broad transformative change (Flanagan et al., 2023; Janssen et al., 2025; Mouthaan et al., 2024; Priebe & Herberg, 2024; Wolfram et al., 2016). In this setting, improved understanding of scalar potential could reveal how local practices could be up-scaled to enhance their impact, and how diverse actors locally, nationally, and globally are involved in mission governance (cf. Coenen et al., 2012). Relational scalar understanding can enhance consideration of local contexts and needs, making missions more adaptable and ensuring that they align with broader societal goals. Our analysis of the tensions illustrates how the operationalisation of a systemic innovation like MaaS requires broad systemic and structural changes, including a shift in consumer values and behaviour. This, in turn, is connected, for example, to urban infrastructure itself, requiring an integrated planning approach including economic development, housing and land use. The legitimisation of MaaS as a practical use case of a sustainable mobility mission would require the state, cities, and their residents, and the service providers, along with many other actors, to connect and commit to the jointly identified mission, which could then serve as an integrative arena for the co-construction of legitimacy and a relational scale for mission-oriented agency.

5. Conclusions

In this research we investigated how conceptualising missions as relational scales of agency contributes to (1) advancing spatial legitimacy and governance of missions and (2) mitigating and harnessing the scalar tensions emerging from transformative mission implementation. We explored the overarching MOIP implementation gap and the three more specific and intertwined research needs around the role of cities, scales and agency in mission implementation. Our integrated approach to these research needs focused on advancing relational scalar theorising in the MOIP context, as scalar analysis has the potential to illuminate implementation challenges (Brett et al., 2023; Mouthaan et al., 2024; Uyarra et al., 2025).

The *integrated theoretical framework on missions as relational scales of agency* directs research attention to understanding MOIP implementation as relational practice integrating organisational, scalar, and sectoral interests. Drawing primarily from human geography, relational scalar theorising contributes to a broader discussion on rescaling and spatialisation of transformative missions and the related legitimisation processes that can advance integrated and inclusive mission implementation, underscoring their connecting elements and shared meanings (Janssen et al., 2023). From this perspective, spatial policies, which are territorially embedded and integrative both horizontally and vertically, provide a logical context and a next step for both MOIP scholarship and practice. Specifically, urban policy and governance feature as place-based relational systems providing an integrated arena for mission-oriented agency across sectors and scales. Urban policy could also mitigate scalar tensions by developing arenas for mission-oriented policy integration and catalysing mission-oriented agency. Mission legitimisation is essentially a spatial process, underscoring the importance of stakeholder and citizen engagement and co-production of legitimacy through everyday agency.

Figure 3 summarises the contributions and key messages to both theory and policy, directing attention to the potential of identified tensions as leverage points for long-term societal transformation. Cities need to

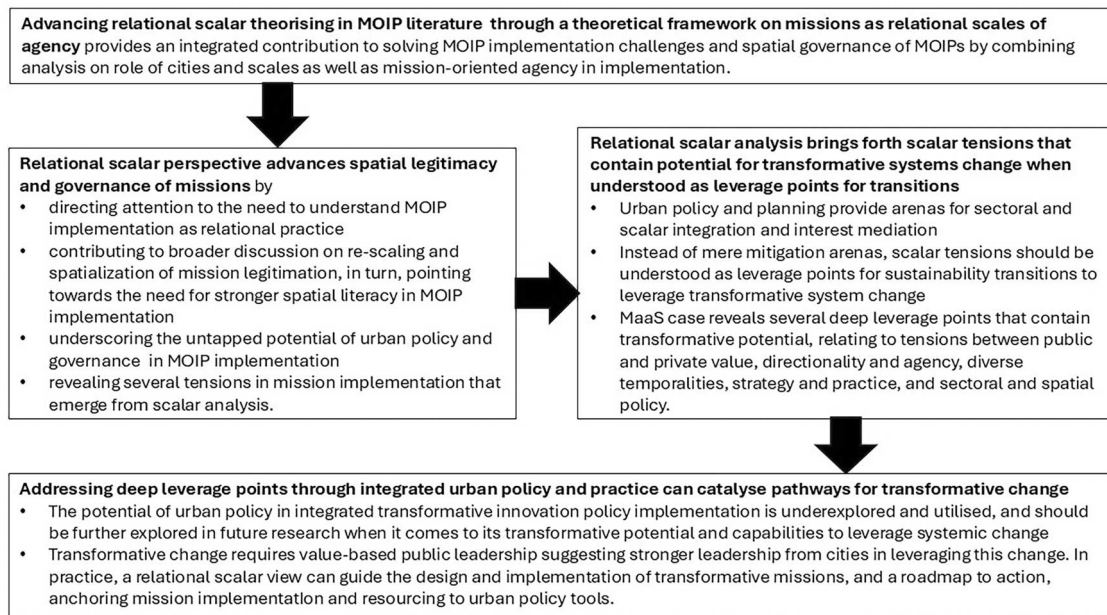


Figure 3. Principal arguments and contributions.

strategically prioritise these leverage points and provide stronger value-based public leadership to drive transformative change.

The MaaS case presents researchers with a pertinent empirical context for examining the implementation of MOIP and for investigating the intricate spatial processes involved in implementation, legitimization, and the leveraging of transformative potential within urban environments through place-based governance. The present research underscores that strategic spatial planning and its integrative potential remain theoretically and empirically underexplored in the context of the implementation of MOIP. Given that MaaS is frequently implemented in urban areas, the associated research involves an examination of the roles played by urban policymakers and other key stakeholders in multi-actor transformation processes, as well as their navigation of the uncertainties surrounding emerging technologies. Furthermore, subsequent research ought to explore the conceptual issues associated with scalar analysis (e.g., Moore, 2008). This is necessary because missions, as relational scales of agency, serve both as frameworks that structure mission-oriented agency and governance, and as analytical instruments facilitating the study of MOIP implementation. Scale altogether is a powerful conceptual metaphor in the MOIP context largely because it provokes associations of points of reference – a kind of relational scalar fix – which are instrumental in successful mission implementation.

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Ethics statement

This research was conducted in accordance with the University of Vaasa's guidelines and the national Finnish standards for ethical research practices in the social sciences. Informed consent was obtained by providing participants with information about the study, its privacy notice and the principles of consent in research participation prior to data collection. Consent was then confirmed in writing or immediately before the interview began. All identifying details have been removed from the manuscript to ensure participant privacy.

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Data availability statement

The data are not publicly available due to ethical and privacy restrictions.

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