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# The Role of Local Public Authorities in Steering toward Smart and Sustainable Mobility: Findings from the Stockholm Metropolitan Area

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## ABSTRACT

The contemporary transport policy discourse has come to include an increasing focus on smart mobility. This paper contributes to this discussion by exploring early understandings among local public authorities who have a formal responsibility to steer the transport system toward sustainability objectives. The paper analyzes different governing strategies expressed by local civil servants and shows examples of leadership, a market-driven approach or reactive tactics. We conclude that commercial interests are currently shaping smart mobility, which will not necessarily result in sustainable mobility. There is a need for a political focus on how digitalization should be used to achieve sustainability.

## KEYWORDS

Smart mobility; governing strategies; sustainable transition; local public authorities

## Introduction

During the last few years, we have seen an increasing focus within both research and policy development on digitally supported (so-called ‘smart’) mobility (Docherty *et al.*, 2018; Lyons, 2018). It is linked to a hope or assumption that digital technology will make the transport sector more resource-efficient and will contribute to the development of sustainable cities and regions (Fagnant & Kockelman, 2015; Laine *et al.*, 2018) with enhanced efficiency and productivity (Kitchin, 2016). Smart mobility as a concept is associated with a broad range of socio-technical configurations such as intelligent infrastructure, automated, connected and electrical vehicles, combined mobility services and new forms of sharing based on platform technology (Lyons, 2018; Marsden & Reardon, 2018), and different ways of providing access without traveling (Kramers *et al.*, 2018). The meaning of smart mobility varies and today it is best understood more as a label rather than as something demarcated and clear. Overall, the label entails a promise of new ways of achieving personal mobility (Marsden & Reardon, 2018). However, the contemporary policy discussion primarily focuses on the potential benefits (Henriksson *et al.*, 2019). Risks such as diminished public transport supply and consequently increased segregation (Golub *et al.*, 2019; Pangbourne *et al.*, 2020; Satterfield *et al.*, 2019), or risks to data security and privacy (Kitchin, 2016) are seldom highlighted in public debate (Henriksson *et al.*, 2019). Furthermore, the connection between smart and sustainable is often unclear, and scholars argue that there is a need to ensure that ‘the

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paradigms of smart urban mobility and sustainable urban mobility are aligned' (Lyons, 2018, p. 12; cf. Docherty *et al.*, 2018).

Contemporary research stresses the importance of developing knowledge of governance to ensure that the prospects of digitalized mobility also contribute to fulfilling long-term goals as defined through political programs and visions, with particular relevance for aims for equity and sustainability (Docherty *et al.*, 2018; Lyons, 2018; Marsden & Reardon, 2018; Pangbourne *et al.*, 2018). While previous research often emphasizes the importance of strong governance, there is less knowledge about how such governance strategies can be adopted or practiced by public actors, and under what institutional conditions public actors have to meet expectations of smart mobility. These issues are addressed in depth in this paper. The expectations regarding smart mobility still leave many questions to be answered, for example regarding what role citizens and authorities should play in a transition to a smart transport system. The formative phase in which smart mobility is currently situated, can be understood as a 'window of opportunity' to pause and reflect on how public actors can steer this transition (Reardon & Marsden, 2018) Thus, what roles different actors will be assigned and take on will shape the nature of mobility in the near future.

However, the idea that the public sector should proactively steer the smart mobility transition is a delicate issue. Several decades of liberalization, marketization and privatization (Rhodes, 2007) have effectively fueled a discourse about the state as 'inertial, necessary for the "basics", but too large and heavy to be the dynamic engine' (Mazzucato, 2015, p. 134). Currently, the smart mobility transition seems to be driven by a new set of actors, often from the private sector, who have an interest in influencing the urban transport systems and planning (Pangbourne *et al.*, 2020; Stone *et al.*, 2018). This is changing the planning landscape as a whole and demands a new set of skills and area of expertise for public actors. They need to understand not only private enterprises and their business models but also how these configurations relate to long-term sustainability goals (Isaksson *et al.*, 2019; Lyons, 2018).

This paper explores early understandings regarding smart mobility among local policy and planning officials with a formal responsibility to steer the transport system toward sustainability objectives. Sustainable mobility entails the shift to a more efficient transport system that prioritizes accessibility over mobility and favors transport modes such as walking, cycling and public transport instead of today's dominant motorized transport (Banister, 2008).

The study highlights the strategic importance of local authorities and the specific institutional conditions they work under. The overall purpose of the paper is to shed light on possible governing strategies for local authorities based on their understandings of smart mobility and its role in a transition toward sustainable mobility. In doing so, we contribute to a further understanding of the position of local authorities in the expected transition to smart and sustainable mobility. At the local level, we have chosen to focus specifically on public servants who have an important role, not only in implementing political decisions, but also in actively contributing to governance and planning strategies in close collaboration with leading politicians (cf. Svara, 2006).

The paper builds on empirical research in the Stockholm metropolitan area, which has been internationally recognized for its ambitious agenda for sustainable transport (Isaksson *et al.*, 2017), as well as ICT and digitalization in general (Angelidou, 2017). The case of Sweden (and Stockholm) illustrates a decentralized governance and planning context, where local authorities can regulate through the municipal plan monopoly and have the 'primary

responsibility for planning the use of land and water within a legal framework set and supervised by national government' (Bjarnadóttir, 2008; SFS, 2010, p. 900). In practice, this means that regional or national authorities have no formal power over local development decisions, as long as they do not violate national regulations. Furthermore, the local administrative level is interesting to analyze for its closeness to local networks, and its legitimacy as a formal and democratic decision-making body.

The paper sets out to explore the following research questions:

- How do public servants make sense of smart mobility as a means to achieving sustainable mobility?
- How do they reflect upon different governing strategies in relation to smart mobility?

The paper is organized as follows: In the next section, we introduce the analytical framework. A section follows where we present the research design and discuss our decision to empirically focus on two municipalities in the Region of Stockholm, Sweden. Thereafter comes a section where we describe the planning context of this region, which is followed by the results from the interviews. In the final discussion and concluding remarks we stress important lessons learned concerning governance on a local level.

## **Analytical Framework: Governance Strategies**

Theoretically, the paper is broadly inspired by literature on interpretive policy analysis (Hajer & Wagenaar, 2003), which stresses the importance of perceptions, framings, and knowledge-perspectives at a hands-on policy level. We analyze meaning-making processes in a governance setting. Drawing on lessons from the growing body of smart mobility literature there is an urgent need for active governance strategies, so that public actors can ensure sustainability, accessibility and equity in a smart transition (Docherty *et al.*, 2018; Lyons, 2018; Stone *et al.*, 2018). Previous research have identified leadership, enablement and laissez faire as three types of governing strategies (see Pangbourne *et al.*, 2018, p. 41).

### **Leadership**

Lyons and Davidson (2016) argue that policymakers have a responsibility to consider what actions are best suited to evolving the transport system in a desirable direction. Pangbourne *et al.* (2020) stress that leadership includes setting objectives, monitoring mode share changes, and understanding social, distributional and environmental impacts, as well as providing an environment where innovation can flourish and where citizens can participate. For Mazzucato (2015), leadership demands a vision, and a belief that the state has an important role in steering a green transition. This demands not only bureaucratic competence but also innovative capacity and sectoral knowledge. Leadership is a proactive role.

### **Enablement**

Previous research has also found that public actors make active efforts to stimulate processes of market-driven smart mobility innovation (Audouin, 2019; Kronsell & Muhktar-Landgren, 2018; Muhktar-Landgren *et al.*, 2019; Muhktar-Landgren & Smith,

2019; Pangbourne *et al.*, 2018). This can be done through removing barriers or putting forward incentives for implementation by commercial organizations, for example by public-private partnerships and demonstration projects. The underlying rationality is a belief in the innovative capacity of the market, while public actors are thought to lack this capacity (Mazzucato, 2015). Acting as an enabler is a common governing strategy among municipalities today. For example, Stone *et al.* (2018) describe the enabler position as the most ‘dominant ideological view’ of land use and transport planners within an Australian context. Enablement is also a proactive role in the sense that it actively supports market actors.

### **Laissez-faire**

Laissez-faire can be described as a wait-and-see approach where public actors avoid getting involved in new processes and see market mechanisms as the most vital factors for societal development (Audouin, 2019; Stone *et al.*, 2018). Pangbourne *et al.* (2020) state that as an effect of general loss in institutional capacity due to marketization and economic crisis, it might be tempting to let the smart mobility market ‘take care of it all’ (Pangbourne *et al.*, 2020, p. 11). A general characteristic of a laissez-faire approach is that the governing body lacks the capacity to ensure specific goals, such as objectives of climate neutrality, or social sustainability (Stone *et al.*, 2018). Public actors can have a hard time predicting the attributes of an evolving technology, the time for implementation and the scale, which might cause them to act with hesitation (Guerra, 2016). Laissez-faire is a reactive role.

We understand these three governance strategies as ideal types that can only be separated in a theoretical sense; in reality they might overlap and can vary over time and within organizations (cf. Muhktar-Landgren & Smith, 2019). Moreover, we do not conceptualize these ideal types as holistic approaches, in the sense that it is not likely that organizations will adopt only one of these governance strategies for all their activities; instead, they will probably adjust and blend different strategies depending on the situation. Since public authorities are decision-making bodies, they have a societal impact irrespective of governance strategy. Regardless, how they interpret their role will matter in how they relate to other actors. We shed light upon what conflicts and tensions arise between different framings of smart mobility and governing strategies. Thus, in the paper, the three strategies work as a conceptual toolbox that makes it possible to tease out differences in how public servants understand, construct and represent their roles in a sustainable transition.

### **Research Design**

The empirical case in this study is based in the Stockholm metropolitan area. Previous research has noted that the conditions for implementing sustainable mobility differ significantly between the inner city and other parts of the region (Norell-Bergendahl, 2016). For this reason, we wanted to carry out fieldwork in different places. Thereby, we would get a rich and more nuanced picture than if we would only focus on a single municipality. However, to ensure the possibility to carry out an in-depth exploration, we delimited the empirical focus to two municipalities in the Stockholm metropolitan region: the city of Stockholm and the municipality of Botkyrka. The city of Stockholm is densely populated, with a high average income. It is well-known both for its high-capacity public transport network, its walkability

and various initiatives for sustainable mobility. In Botkyrka, located 20 km south of Stockholm city center, the situation is different: parts of the municipality have access both to the metro and the commuting train network, while other parts are much more car-dependent. On average, Botkyrka is a less well-off municipality than the city of Stockholm, even though there are large local variations in both municipalities. There are differences between the municipalities when it comes to smart mobility too; the city of Stockholm has seen several market initiatives regarding smart mobility, such as e-scooters, new travel apps and car-pooling initiatives. In Botkyrka, there are no major smart mobility initiatives driven by commercial actors, but the municipality has a notable interest in learning more about the potential to use digitalization as a means for sustainable mobility and participates in research and development initiatives focusing on these sorts of questions.

In total, we conducted 11 semi-structured interviews with 12 persons, seven of them in Stockholm and five of them in Botkyrka, in the spring and autumn of 2019. The interviewees were selected in consultation with the municipalities or were recruited based on a snowballing sampling technique. The respondents work with issues related to parking, sustainable mobility, traffic modeling, impact assessment, or jurisdiction, and in some cases also give advice regarding climate mitigation to residents and business within the municipality. On a daily basis they work with local land use, traffic planning, or with issues connected to digitalized mobility. Many of them have central positions in the sense that they are experts in their field or managers. All interviews were carried out as face-to-face meetings, except for one interview in which one of two respondents participated by phone. The interviews lasted around 90–120 minutes and were all recorded and transcribed in full. All the interview transcripts were coded and analyzed in depth jointly by the authors. In the text, the informants are numbered (1–7) and referred to as B (Botkyrka) and S (Stockholm).

In addition to the interviews, we have read policy/planning documents on sustainability, digitalization, transport and mobility, in order to get a better understanding of the two municipalities' overall policy direction and specific problem areas. In Botkyrka, we also carried out an explorative workshop in Nov 2018 with in total nine persons (of which four eventually participated in individual interviews). In Stockholm one of us participated in a workshop organized by the city administration in April 2019, where local officials discussed micro-mobility and the possible action space for municipalities regarding this phenomenon.

Rather than comparing how the two municipalities interpret, engage in or support smart mobility, we discuss the different governing strategies and tensions that surround them.

## **Making Sense of Smart Mobility and Justifying Governing Strategies**

In this section we analyze how public servants describe their roles, capabilities and responsibilities in relation to smart mobility. In their various reasonings we have teased out legitimizations of how they relate to this concept, and we structure the analysis around the three governing strategies: Leadership, Enablement and Laissez-faire. We also shed light on the tensions that these strategies generate when turned into practice. This section starts with an analysis of how public servants describe what smart mobility entails for them and the potential they assign to this concept in order to achieve a more sustainable transport system.

## What's the Deal with Smart Mobility?

The public servants refer to various elements and attributes when describing what smart mobility entails for them. They mention characteristics such as electric, automated and connected vehicles, and primarily refer to cars, bicycles and e-scooters. Sharing frequently occurs as a core feature in their descriptions, as well as an increased degree of mobility offered as a service (MaaS). Names of companies offering mobility services are recurrent in the respondents reasonings, which signifies the impact these corporations have on how smart mobility is interpreted. The informants emphasize personal mobility but some also include freight in the concept. Some underscore the so-called last mile for personal transport, meaning the distance between public transportation stops and final destinations for users. Furthermore, several respondents argue that the term smart mobility is more frequently used when referring to commuting and work-related travel than the more complex travel patterns that people demonstrate in their leisure time. Some mention that this focus reduces the potential of smart mobility and explain that work-related travel only accounts for a small part of personal mobility, and for those in suburbs traveling to and from Stockholm city district such travel is to a large extent already covered by public transport. However, several respondents could see an environmental potential in services that coordinate the neglected leisure time travel that is currently carried out primarily using private cars, for example shared mobility solutions for parents driving to and from children's training events.

The public servants frequently refer to digital components such as apps, digital boards, ICT structures, sensors etc., thus stressing the surrounding infrastructure that smart mobility rests upon. When the digital features of smart mobility come up during the interviews, the respondents often mention concepts such as big data, algorithms and platform companies. Such associations indicate that smart mobility can be understood as a concept that consists of multiple layers with elements that in turn connect to other societal developments. These tendencies also generate reflections about the concept's potential. While some of the respondents argue that digitalization can simplify the emergence of sustainable solutions there are also those who mention that such a development could lead to less resilient systems and integrity issues.

The uncertainties about smart mobility's advantages and disadvantages recur in the reasoning among the local public servants. When mentioning potential, they on the one hand often return to what future societies these emerging configurations can enable and seem to understand them as important tools to reach long-term societal objectives. The respondents can argue that smart mobility may assist in phasing out both private cars and fossil fuels, may achieve a society with more efficient use of resources, may enable people to work from home, may free up city space currently used for car parking, and may enable a more efficient transport system etc. They also mix these positive connotations with less attractive consequences such as more and longer travel pushed by the emergence of self-driving vehicles, competition with public transportation, increased segregated communities, unclear regulations on how new vehicles should interact with other, and health issues due to increased convenient lifestyles or lack of safety measures e.g. helmets on shared vehicles such as e-scooters. Other arguments concern the fact that, from a wider perspective, the environmental benefits of these solutions are not always obvious. Taking e-scooters as an example, some respondents argue that they primarily



replace climate-friendly transport modes, such as public transport. Also, they mention that sharing e-scooters might intensify material usage due to increased wear and tear, and if the maintenance of these e-scooters is handled by car they can even increase the total number of car-based journeys.

The public servants thus describe a puzzle of different elements that combined can be described as an assemblage constituted of both social and technical components. A recurrent conceptualization seems to be that there are no strict limits to what should be included in the concept and what should not. Aligned with such reasonings some argue that there are many actors who talk about smart mobility, but few who have implemented it in practice. This correlates with Schick and Winthereik (2013) description of another smart infrastructure, the smart grid, as a 'partially existing object' meaning that its ontological status is still unclear. This status also captures smart mobility, as it is a vague and fuzzy object in the making that operates between the present time and the future: it has partly been materialized today and partly relates to ideas of what might come in the future. All these ambiguities generate uncertainties in relation to the concept's potential.

*We have been using these words, what is it and what we mean and such. You can of course continue discussing definitions infinitely and that is not my intention, but the boundaries are not clear. And therefore, it becomes a bit difficult when we have to write in documents what we mean and whether we should work with this or not. (S1)*

The multifaceted nature and uncertain potential of smart mobility thus makes it difficult for public servants to clearly justify how this concept should be handled, which will be further illustrated in the following analysis of governing strategies.

### **Leadership: We Need to Practice What We Preach**

The interviews show that public servants in various ways state the importance of taking on a leadership role that ensures the alignment of smart mobility and sustainability objectives. Their possibilities to take on this role are however strongly dependent on whether they have a clear mandate for such engagements which is not always the case. Some respondents, especially officials in Stockholm, argue that engagements that facilitate the implementation of smart mobility are backed by politicians. However, some seem to suggest that this does not necessarily mean that they have the mandate to take a leading role to make sure that these solutions are sustainable. Officials in Botkyrka argue that the political emphasis on digitalization and sustainability varies between political parties, making this into an issue that to a certain extent is pushed by individual officials with specific mandates. A general conceptualization is that formulations in strategic documents steer which activities they engage in, explaining why public servants try to influence the content of these documents.

One of the most significant ways in which local authorities can practice the leadership role in the Swedish context is through the municipal plan monopoly, enabling them to develop societal structures that facilitate more sustainable mobility, in a long-term perspective. Furthermore, they can influence the development by installing infrastructure such as charging posts. Local authorities also act as regulators of parking policies and norms, even though legal restrictions limit their actual possibilities. For example, they are not allowed to reserve parking spaces for car-sharing. Some suggest that municipalities also can use tests, pilots and demonstration projects as arenas where they can allow themselves to bend some rules, engage with



experimental activities and set requirements for configurations under test. The potential of governing their own organization is also stressed as an important way to show how increased digitalization of transport-related issues can prompt a sustainable transition. Botkyrka municipality has implemented digital tools that enable rigorous follow-ups on how, where, and by whom their vehicles are used, information that can facilitate vehicle-sharing but that can also increase their own understandings. This information can in turn accelerate more sustainable choices, which is illustrated in that Botkyrka municipality pushed the establishment of a centrally located biogas station to facilitate their own, and others', usage of this fuel instead of less environmentally-friendly alternatives. A recurrent comment justifying progressive measures of their own organization is that they should be at the forefront of change and show others that a sustainable transition is possible:

*That's what it is about: to have our own experience and to practice what we preach. It is a strength that we know what we are talking about and that we use it in our own [organization]. (S1)*

By pushing themselves to become progressive they grow skilled in the procedures they advocate to others, which enhances their degree of trustworthiness and strengthens their institutional capacities. In this way the role of leadership entails an element of being an inspiration for change, rather than necessarily enforcing that change upon other actors. This is closely aligned to the fact that local authorities are large organizations. Their impact is strengthened by their size, especially if different municipalities join forces and through demands, for example in procurements, push transitions.

Even though there are some ways in which municipalities can practice a leadership role, the interviews show that this role also generate tensions. They need to follow current regulations and sometimes find themselves in a 'gray zone' as regards what they can and cannot do. This relates to the fact that they, as an official body, are not allowed to favor a particular company or configuration; they are expected to be technology neutral and unbiased. An illustrative example of this is that both municipalities have opened the carpool procured for their own organization for citizens, and some respondents mention that this puts them in an ambiguous situation:

*According to the municipal law, we are not allowed to advertise individual companies. If we had the opportunity, we would be happy to advertise the externally procured carpool which is also open for the public to use. But we are not allowed to do that. (B1)*

Furthermore, local authorities have limited possibilities to make concrete impacts on the transport system since it is dependent on the conduct of other institutional levels. Finally, progressive local measures are not always appreciated by the citizens who in the end vote for the politicians in charge, which complicates the practice of a leadership role that takes proactive measures to achieve a more sustainable transport system. Overall, the respondents mention several restrictions that combined give the impression that their freedom to take on a leadership role is restricted.

### **Enablement: Companies are More Innovative than Public Actors**

Municipalities can also practice an enabling role in a variety of different ways. This is illustrated in arguments that local authorities can help market actors by connecting

different organizations, establishing platforms, financially supporting initiatives etc. In contrast to previously mentioned arguments, we also detect findings that they can act as enablers when participating in experiments such as pilots, demonstrations or the like. When they guide the projects as members of reference groups, allow exceptions from current regulations and learn how to simplify the diffusion of tested solutions they enact this role (cf. Muhktar-Landgren *et al.*, 2019). The respondents primarily justify this governing strategy with argumentations describing why smart mobility does not fall within the scope of the municipal assignment. When doing so they seem to define the concept as limited to a service, and most Swedish municipalities are not in charge of the public transport services since this is organized on a regional level. In their justifications they also point to the Swedish municipal law declaring that local authorities are not allowed to compete with the private sector since ‘the municipality, in its municipal mission, is limited by what we can use the municipal funds for’ (B2). Besides references to accountability, the enabler role can also be justified with descriptions of market actors as better suited to work with innovations. It seems to be a deeply rooted idea that market actors possess the necessary knowledge, way of thinking and will to develop new solutions that can revolutionize the transport sector. According to these argumentations, the role of municipalities is to spur innovation from others rather than to be innovative themselves:

*I think it is very difficult to just give a public body an assignment to be innovative. I don't really believe in that, it usually ends up badly. There needs to be an innovator that the public actors can support. (S2)*

By supporting initiatives driven by the private sector the respondents also argue that they in turn enable work opportunities and eventually economic growth. A recurrent expression is that municipalities should not ‘kill the development’ of innovations that eventually could emerge as appreciated and profitable solutions. In this way a recurrent logic is that ‘we should be at the forefront, but we should not lead it ourselves. We should be positive and find projects that we can test’ (S3). Furthermore, the respondents could also justify why smart mobility should be driven by the private sector by stating that it is part of the commercial role to take risks while they, as public actors, have a responsibility for how tax money is used and should avoid spending resources on challenging new issues with uncertain outcomes.

The public servants also express ideas that can be interpreted as signs of unease about taking on the enabler role. This primarily relate to what kinds of mobility solutions they will enable, where they will be located and for whom they are designed. Some mention that they primarily favor initiatives driven by commercial actors, while they would like to collaborate more with non-profit organizations and civil society. The respondents also return to stating that implemented configurations of smart mobility are far from ideal; to put it frankly, they are not as ‘smart’ as they could be. The interviews show that several officials do not know whether these solutions are worth striving for or even if they are aligned with the authority’s long-term objectives since it is still uncertain what these emerging configurations will entail in the future. It is important to note that by allowing the establishment of certain mobility solutions, for instance e-scooters, public authorities give these configurations a head start and once they have gained momentum it might be difficult to introduce restrictions or regulations.

In some of the officials' reflections we detect concerns about commercial actors being primarily interested in profits. These concerns are based on the fact that commercial interests tend to make market actors target the most profitable users and geographical areas, a logic that can be described as 'cherry-picking' (Graham & Marvin, 1994). It is telling that an abundance of mobility services such as e-scooters, rental bikes etc. have recently been established in Stockholm while commercial interests are almost non-existent in the less central municipality of Botkyrka. Finally, the respondents also raise concerns about neglect of the elderly, disabled and people with limited digital competencies. 'If you consider Stockholm to be a city for everyone, how do you ensure that they get the same service as those with a smartphone. It's a challenge as I see it.' (S4). It is possible to argue that by taking on the enabler role, municipalities encourage development steered by commercial interests that tend to ignore equality measures and favor certain needs and wants above others.

### Laissez-faire: The Future Is Uncertain, Let's Wait and See

Finally, the public servants also adopt a laissez-faire approach. A recurrent line of argumentation proposes that local authorities act in a world of uncertainties that are constantly changing. Representatives from the city of Stockholm could for example mention that a few years ago they did not need to discuss regulations concerning e-scooters as they do now.

*The conditions change, it is like a living operation. I think it's very difficult to say okay this is how we'll do it and then we'll stick to that for five years. We constantly need to adapt. (S5)*

This way of reasoning seems to imply that authorities are the ones who need to adapt to transport innovations rather than the other way around. Such understandings are closely related to the conception of innovations as necessary components for the realization of long-term societal objectives. In contrast to the previously analyzed strategies this rationale proposes that municipalities should not be too restrictive but should wait and see what happens. When arguing for this governing strategy, the respondents express a general trust that one way or other things will work out for the best in the end. A common reference among the public servants in Stockholm is e-scooters, for which there is currently no targeted regulatory framework at hand in the Swedish context. Instead, the city has so far relied on voluntary agreements with e-scooter companies, where it is stated that the vehicles shall comply with special restrictions on speeds and parking. Some describe this as a test to see if these optional agreements are enough or whether they need to introduce enforcement regulations. Thus, they argue for the need to figure out how to act next. 'I think reactive is a good word here, not just proactive. If you are proactive, there is a risk that you will judge something before you have seen it balance out a bit' (S6).

Another reason why the municipalities take on a reactive role is that their hands are full of other duties. This motive seems to be more common among the respondents from Botkyrka, which might be because this municipality is much smaller than Stockholm but also because they face other challenges. When engaging with traffic-related issues citizens could ask: 'Why do you spend energy and time on this when neither the school nor the elderly care work and young people get shot?' (B1). This line of reasoning suggests that

smart mobility is currently a ‘non-issue’ for the inhabitants of Botkyrka, and that the authorities have a responsibility to spend tax money on properly thought out and relevant measures to resolve matters that are more urgent than smart mobility.

However, while taking the laissez-faire approach can be interpreted as a responsible way for public bodies to not rush into hasty decisions it can also be read as an act of fear. We note a frustration among some respondents when they meet citizens who expect them as public actors to fix societal problems and ask ‘why don’t you do anything about this’. On such occasions the servants can describe a feeling of letting citizens down. This suggests that municipalities cannot always afford to use both belt and braces; sometimes they need to take a risk to make things happen. The reactive strategy of laissez-faire thus raises tensions in relation to the fact that municipalities have responsibilities to ensure the realization of set long-term societal objectives:

*We have been good, and have developed objectives. Now we must concretize what they mean to us. If we should induce private players to start something here, then we must participate in demanding how these services should be designed, otherwise it is just money down the drain for everyone. Time and resources that vanish. (B3)*

It is possible to direct severe criticism toward a laissez-faire approach since even though municipalities might not have control over the future, they should be able to express what kind of future they desire and should steer toward that future. Some respondents mention that they long for committed politicians who give them a mandate and resources to fulfill set objectives by turning them into concrete actions.

## Discussion

The aim of this paper has been to explore different possible governing strategies for municipalities based on early understandings of smart mobility and its role in a transition toward sustainable mobility. We have used three potential governing strategies identified in current literature as analytical devices to tease out tensions, conflicts and contradictions in how public servants make sense of smart mobility in relation to their tasks and mandates.

To summarize, the analysis shows that smart mobility is still a ‘partially existing object’. On one hand it is interpreted quite narrowly as digital components such as apps and digital boards that could inform individual mobility through easily accessible information. On the other hand these digitally enhanced configurations can be interpreted more holistically and as tools for shaping future sustainable societies. The public servants can justify why they practice all three roles (Leadership, Enablement and Laissez-faire) with reference to available resources, responsibility for correlated issues, prioritizations and obligations toward the common good etc. These various issues cannot easily be separated; rather they are intertwined and create an intricate landscape of concerns that public authorities need to navigate through. All roles deliver doubts and frictions showing that a local authority’s relation to smart mobility is far from given. Nevertheless, we find that municipalities’ current strategies for governing smart mobility can primarily be summarized as aligned with the approaches of Enablement and Laissez-faire. These strategies also reflect central themes in a broader political discourse and a dominant political orientation toward neoliberalism. Both approaches have the effect that market actors with commercial interests are more or less consciously given a central role in shaping the constitution of smart mobility. In this way they are also given the mandate to

decide which configurations are worth striving for. However, commercial actors are most likely to drive the development toward their own goals, where a primary focus will be on finding paying customers, rather than achieving a sustainable sound transport system with reduced levels of traveling (cf. Marsden & Reardon, 2018; Pangbourne *et al.*, 2018).

Which governing strategies are considered reasonable is highly dependent on how smart mobility is interpreted and the potential assigned to this concept. Municipalities' future roles are strongly linked to whether smart mobility will hinder or facilitate the fulfillment of long-term societal objectives. This is still a concept under development, and depending on the form it finally takes, smart mobility can either fill a role in achieving a sustainable society or it could drive the opposite development. The current ambiguous ontological status of smart mobility allows different actors to frame the concept in a way that fits their own interests. Framing smart mobility as an innovation attributes signs of societal progress and success to the concept. However, not all innovations are necessarily sustainable. In this context, it becomes important to think of smart mobility not as an end in itself but instead as a tool to achieve sustainability. If specific initiatives for smart mobility do not clearly contribute to sustainable mobility, public actors should not prioritize them – or they should at least try to adjust the smart mobility components, so they better align with long-term societal objectives. This means that if local authorities spend their time and energy promoting smart mobility, it should be part of a strategy for achieving sustainable mobility. In other words, they need to make sure that smart equals sustainable, which currently is not always the case (Lyons, 2018).

Based upon what we have found in this study, we see a risk that when commercial actors push the implementation of smart mobility, they become the ones who shape the agenda, and the municipalities are forced to deal with it no matter how it fits with public visions and ambitions. This means that when devoting their time and effort to handling smart mobility, the municipalities will need to downgrade their prioritizations of other measures that might be more direct ways to achieve sustainability. We echo the sentiments of previous research that positions the current time as a 'window of opportunity' that enables officials to reflect on the most appropriate way to handle smart mobility (Reardon & Marsden, 2018). There is a need for a clearer political focus on what we as a society want to achieve with digitalization. At present, there are several obstacles and difficulties for municipalities in taking a clearer leadership role. They do not have all the necessary institutional conditions to lead a smart and sustainable transition. But there are also opportunities that to a large extent are dependent on how municipalities understand their own role and space to act. Most importantly, if public actors do not take on a proactive governing strategy now, they might end up in a future situation with diminished institutional capacity (Reardon & Marsden, 2018).

This study builds on material from two Swedish municipalities in a metropolitan region. Since the Swedish context implies certain conditions for local authorities, this arrangement of governance creates specific preconditions that do not necessarily apply to other countries. Furthermore, even though this study is located in two municipalities that differ in terms of socio-economic and geographical composition as well as the current presence of smart mobility services, both are located in the same urban area. It is possible that we would have identified other reasonings if we had conducted the study in a more rural area. It is also plausible that the interviews might have shed light on other perspectives if we had interviewed civil servants within other areas of expertise. Nevertheless, we believe that it is valid to conclude that public authorities' capacity to govern and take on a leading role has

consequences for their abilities to adopt different governing strategies. Due to the differences in resources and conditions such as geographical context, population, institutional conditions etc., it might not be ideal if every municipality, or public authority depending on the context, spent separate resources on how they should relate to smart mobility; rather, they need to coordinate with one another. In other words, institutional capacity can be a collective resource that can be shared between different governing levels. Another, and partly correlated, lesson concerns that other public actors at regional and national level need to acknowledge the differences between municipalities.

In sum, smart mobility contains major and important political issues that require a new type of political discussion about the role of public actors in the sustainability transition. Public actors are responsible for ensuring that the changes they advocate are credible and must base their engagements on an understanding that to facilitate commercial interests can be a risky approach in relation to goals of long-term sustainability. In order to gain broad societal acceptance for necessary transition measures, public actors need to prioritize their time and resources on issues that are credible means to achieve a future sustainable transport system.

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