



LUND UNIVERSITY

(In)capacity to implement measures for increased cycling? Experiences and perspectives from cycling planners in Sweden

Alm, Jens; Koglin, Till

Published in:
Journal of Urban Mobility

DOI:
[10.1016/j.urbmob.2022.100029](https://doi.org/10.1016/j.urbmob.2022.100029)

2022

Document Version:
Publisher's PDF, also known as Version of record

[Link to publication](#)

Citation for published version (APA):
Alm, J., & Koglin, T. (2022). (In)capacity to implement measures for increased cycling? Experiences and perspectives from cycling planners in Sweden. *Journal of Urban Mobility*, 2, Article 100029.
<https://doi.org/10.1016/j.urbmob.2022.100029>

Total number of authors:
2

Creative Commons License:
CC BY-NC-ND

General rights

Unless other specific re-use rights are stated the following general rights apply:
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Read more about Creative commons licenses: <https://creativecommons.org/licenses/>

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

LUND UNIVERSITY

PO Box 117
221 00 Lund
+46 46-222 00 00



(In)capacity to implement measures for increased cycling? Experiences and perspectives from cycling planners in Sweden

Jens Alm^{a,b,*}, Till Koglin^{b,c}

^a VTI – the Swedish National Road and Transport Research Institute, Division of Mobility, Actors and Planning Processes, Bruksgatan 8, 222 36 Lund, Sweden

^b K2 – the Swedish National Centre for Research and Education on Public Transport, Bruksgatan 8, 222 36 Lund, Sweden

^c Lund University, Dep. of Technology and Society, Box 118, 221 00 Lund, Sweden

ARTICLE INFO

Keywords:

local capacity
cycling
planners
urban mobility
municipalities

ABSTRACT

This article seeks to explore and analyse the capacity of Swedish municipalities to implement measures for increased cycling. Through the concept of local capacity and against the backdrop of interviews with local cycle planners, the aim of the article is to gain deeper insights into cycle planners' experiences and perspectives on what the possibilities, obstacles and challenges are as regards achieving the aims of increased cycling. Although the interviews reveal that all capacity dimensions are important, financial and political capacity seem to be the most crucial dimensions. These two dimensions are also the ones that differentiate most between included municipalities, and thus also influence the local capacity. High staffing, earmarked funding, and a shift from the car to a sustainable mode of transport norm are all capacity-building measures. There also seem to be overarching difficulties in developing vertical linkages with the Swedish

Transport Administration to increase the municipal capacity. The authority's responsibility for funding, operating, and maintaining the national public cycle network, and a lack of will to find common solutions are perceived as challenging by many municipalities. Greater consensus and collaboration between municipalities and the Swedish Transport Administration must be achieved to fulfil national and local policy aims on cycling.

1. Introduction

International and national targets on sustainable development and reduced climate emissions require a substantial transformation of the current transport sector. Cycling is often seen as one of the most sustainable modes of transport, and increased cycling is often a goal when seeking to achieve a sustainable transport system (Raustorp & Koglin, 2019; Koglin, 2015a, 2015b; Buehler & Pucher, 2011; Banister 2019, 2008). Cycling also has the potential to contribute to implementation of the UN Sustainable Development Goals (UN, 2021). Nevertheless, to increase cycling, a well-developed infrastructure and planning that puts cycling first are required. However, as the allocation of funds to the development of cycling infrastructure is a political question, the budget for the improvement and maintenance of cycling infrastructure and cycling as a mode of transport has often been marginalised (see e.g., Koglin, 2018, Koglin, 2015a; Koglin & Rye, 2014; Aldred et al., 2019). Moreover, to plan for sustainability and to promote sustainable transport such as cycling is not always easy for planners. Research by Koglin and Pettersson (2017) has shown that planners in Sweden often lack the capacity to implement sustainable transport measures, due to lack of time or political support. Planners rather sometimes feel more like coordinators than

planners and think they have lost power over planning, because this issue has become more complex over the past 20 years and more actors today are involved in the planning processes, both public and private ones (Koglin & Pettersson, 2017). Furthermore, cycling, especially in urban contexts, must be seen in connection to transport and urban planning. In Sweden, about 12 percent of all trips are made by cycle, and Sweden is also regarded as a country where cycling is a daily activity for many citizens (Trafikanalys 2015; Koglin 2020; Haustein et al., 2020). Furthermore, the Swedish Transport Administration (2011) states that increased cycling brings great benefits to society, not least to the environment. Although the view of the Swedish Transport Administration could be seen as an important step towards achieving international and national targets on sustainable development, this has not always been the case. Cycling is still not prioritised and included in planning processes as research has shown (Niska et al., 2010; Aretun & Robertson, 2013; Koglin, 2015a, 2015b; Lindkvist Scholten et al., 2018; Emanuel 2012, 2020; Koglin, 2013; Koglin & Mukhtar-Landgren, 2021).

The way in which cycling infrastructure is planned and what is considered to be good or poor cycling infrastructure is context-bound and can differ between different municipalities. For example, on issues connected to the size of the municipality and its planning traditions. Over-

* Corresponding author

E-mail address: jens.alm@vti.se (J. Alm).

all, a lack of safety for cyclists in relation to car traffic and infrastructure (such as signage and parking) is often cited as a reason why cycling is not more popular in Sweden (Koglin, 2013). The fact that motorists often park their cars on cycle paths, for example, makes access for cyclists even more difficult. Also, research conducted by Koglin (2018) and Balkmar (2014, 2018) has revealed an ongoing battle for space in Swedish cities and for space in traffic for cyclists, which can also be seen as a threat to increased and safe cycling. As Cox and Koglin (2020) highlight, cycling infrastructure is highly politicised, and against this background, a strategic cycling infrastructure must prioritise cycling over cars and be based on the needs of cyclists in terms of factors such as accessibility, safety, and directness. Hence, it is important to investigate how and in what way measures for increased cycling are implemented, what measures are considered to be good or bad, and the opportunities and challenges that may be encountered during the implementation process. But do municipalities have the capacity to achieve the aim of increased cycling? This article seeks to explore and analyse the capacity of Swedish municipalities to implement measures for increased cycling. Through the multidimensional concept of local capacity and against the backdrop of interviews with cycle planners in Swedish municipalities, the paper wishes to create deeper insights into cycle planners' experiences and perspectives on the possibilities, obstacles and challenges for achieving municipalities' aims of increased cycling.

The structure of the article is as follows. In the next section (section 2) we introduce the theoretical framework, drawing on the multidimensional concept of local capacity in order to develop the analytic tool for this investigation. This section is followed by section 3 on research methodology and context, which is focused on semi-structured interviews with cycling planners in Sweden. Thereafter, the empirical material is analysed against the backdrop of the concept of local capacity. Finally, in section 5, we provide the conclusions and discuss the findings' implications for practice and future research.

2. Local capacity

To fulfil this study's aim, we turn to the analytical concept of local capacity. Local governments' capacity (or lack of capacity) to carry out and execute public services has been analysed and discussed in previous research, and the concept of capacity has been discussed and defined by a range of scholars (Gargan, 1981; Franks, 1999; de Loë et al., 2002; Pirie et al., 2004; Ivey et al., 2006). Our definition is based on Ivey et al. (2006, p. 946) who suggest that capacity could be defined on the basis of a relational perspective which emphasises the ability of organisations and governments to establish and achieve their own goals and agendas. The concept of local capacity has a relational perspective (Gargan, 1981; Franks, 1999; de Loë et al., 2002; Pirie et al., 2004) and with regard to this study, all included organisations have developed strategic plans to increase cycling (often as a way to achieve other internal and external aims) but there might be differences and similarities in the ways the planners experience possibilities, challenges, and obstacles in realising these strategic plans and local objectives. Thus, to realise and implement the strategies and measures for increased cycling there needs to be a certain degree of local capacity within an organisation.

The concept of capacity is multidimensional (Gargan, 1981; de Loë et al., 2002) and even though different frameworks use different terminology, there seems to be a broad consensus that capacity includes aspects such as financial, human, managerial, and technical resources, while the institutional environment should also be included in such a theoretical framework (Grindle & Hilderbrand, 1995; Grindle 1996; Hamdy et al., 1998; Honadle, 2001; Ivey et al., 2004).

The approach used in this study draws to a great degree on the work of de Loë et al. (2002). They propose a conceptualisation of local capacity built upon five interrelated aspects: *technical*, *financial*, *institutional*, *political*, and *social capacity*, and while the importance of each of the aspects will vary from organisation to organisation, they are interrelated and influence each other, and will all to some extent influence the over-

all capacity of an organisation to achieve its objectives. We suggest that to achieve increased cycling, elements of all capacity dimensions must be present. The local capacity concept is used as an analytic framework to analyse Swedish municipal planners' experiences and views on possibilities and obstacles in realising the strategic aims and local objectives of increased cycling. The concept supports us in exploring what capacities municipalities have (or lack) to implement measures for increased cycling.

3. Local capacity to achieve increased cycling

3.1. Technical capacity

Municipalities' work for increased cycling could be defined as a *technical* activity. Infrastructure for cycling needs to be maintained and repaired in a proper way to facilitate an increase in the number of cyclists (Koglin, 2013). De Loë et al. (2002) state that the extent to which a municipality is able to undertake technical activities is an important measure of the capacity of the municipality, where the availability of educated staff with specialised knowledge plays a crucial role with regard to the technical activities of the municipalities. It is also of great importance that the staff have the capacity to interpret, and use information provided by external players, such as consultants.

3.2. Financial capacity

Moreover, in line with de Loë et al. (2002), we take a broad approach in terms of the *financial* aspects involved in capacity-building and define it as a municipality's resources available for working with cycling. Loë et al. (2002) suggest that the quantity of financial resources and their sources (e.g., the local tax base, tariffs, grants from external agencies) are crucial to trace in order to understand how capacity is built. Thus, the size of a municipality's budget is one element that affects how much the municipality can spend on cycling, and it also has significance for the way the work on cycling is funded. If a municipality relies heavily on grants and other temporary sources of revenue, this could impact its ability to function independently.

3.3. Institutional capacity

Loë et al. (2002) also suggest that *institutional* considerations are important for understanding how capacity is built in local governments, and they stress that institutional considerations impact institutional capacity on two levels. The first one is the institutional arrangements created by the municipalities, such as plans, policies and strategies. The second one is, according to de Loë et al. (2002), the institutional environment within which municipalities operate. An institutional environment is shaped by laws, rules, regulation, power relationships and procedures, and affects and influences explicitly and implicitly the capacity of the municipalities (Ivey et al., 2004; Pirie et al., 2004). One indication of the degree of institutional capacity, according to de Loë et al. (2002), is the extent to which regulatory and non-regulatory institutional arrangements exist within a certain area. With regard to this paper, the area is local cycle planning.

3.4. Political capacity

Political leadership is also a capacity dimension identified by Loë et al. (2002) as a key aspect of capacity in municipalities. They suggest that it is necessary to provide vision and direction and to be able to recognise and respond to changes. Another key political dimension for capacity-building, raised by de Loë et al. (2002), is the extent to which the political leadership is willing and able to form horizontal and vertical linkages within and beyond the organisation. Pirie et al. (2004) suggest that municipalities can overcome, or at least reduce, institutional

obstacles through establishing vertical and horizontal linkages. A horizontal linkage is developed with one or several organisations operating at the same administrative level to accomplish a given task collectively. A vertical linkage is an agreement or partnership between different administrative levels of government, as a result of the sharing of information and/or resources (de Loë, et al., 2002; Pirie et al., 2004).

3.5. Social capacity

According to Loë et al. (2002), the level of *social capacity* and community awareness is partly a function of a municipality's ability to communicate with its inhabitants to create awareness in relation to a specific political issue: in this study, increased cycling. Measures used for this purpose can for example include public education and outreach programmes. But it is important that the community involvement goes both ways, which means that the municipality not only informs the inhabitants but also actively seeks consultation with them in terms of issues, needs, and goals, and involves them in the planning- and decision-making process to ensure that their interests are considered. Thus, the commitment and involvement of the municipal residents can improve a municipality's capacity. At the same time, opposition, or the fear of opposition from inhabitants, could result in a lack of capacity for the municipality to implement measures for increased cycling.

For our analysis we developed the dimension above into the five ones below in order to create a better analysis

- 1 Infrastructure operation and maintenance
- 2 Financial
- 3 Politics
- 4 Organisation and governance
- 5 Citizens

4. Research context and method

4.1. Institutional context

We carried out the empirical research in Swedish municipalities, which are lower-level local government entities. They are responsible for a large proportion of local services, including schools, water and sewage, and physical planning. In relation to the cycling network, municipalities have the responsibility for funding and maintaining urban and local roads, while national roads are owned and maintained by the Swedish Transport Administration. The national transport authority also has the responsibility for the development of the direction framework for long-term infrastructure planning, which is seen as an important step towards a modern and sustainable transport system. Municipalities' role within the institutional settings, together with their need to relate to state measures and policies, make the municipalities a beneficial context for studying the public effort on increased cycling in several respects. Firstly, the Swedish government has the ambition to become the world's first fossil-free welfare state (Ministry of Trade and Industry, 2018), and in 2017 the Swedish parliament agreed on a climate policy framework which sets out that Sweden shall have no net emissions of GHG by 2045. As part of achieving this objective, the Swedish government presented a national strategy for increased and safe cycling in 2017 which will contribute to a sustainable society (Ministry of Trade and Industry, 2017). Secondly, we note that Swedish municipalities have decided on climate policy objectives that are in many cases much more ambitious than both national and international aims. Thirdly, many Swedish municipalities have overarching aims to increase the bicycle's share of transportation, increase cyclists' status in planning practices, and have bicycles used for half of all trips shorter than five kilometres (Hållbar stad, 2016). Together, these three aspects serve as an interesting backdrop for our intention to deepen insights into capacities or lack of capacities in municipalities to achieve increased cycling.

Table 1
Included municipalities.

Municipality	Inhabitants	Municipal asphalt cycling roads (km)
Halmstad	102 948	300
Karlskrona	66 609	N/A
Växjö	94 274	190
Gothenburg	580 667	540
Trollhättan	59 007	145
Skövde	56 529	134
Örebro	155 989	220
Karlstad	94 194	250
Eskilstuna	107 001	N/A
Sollentuna	73 939	120
Sundsvall	99 448	N/A
Umeå	129 231	228
Luleå	78 102	193

4.2. Method

Empirically, we have applied a qualitative research approach and conducted semi-structured interviews with cycling planners working in Swedish municipalities (see Table 1). Even though the challenges regarding increased cycling are general, many dimensions are local, such as the structure and size of the municipality, the quality of the road infrastructure, local political conditions, local traffic policies, urban planning agendas etc. Thus, conditions to facilitate increased cycling will differ from municipality to municipality. Therefore, to better understand the capacity or lack of capacity for initiating measures for increased cycling, we wanted to study cycling in several municipalities. However, we still wanted to keep some contextual aspects the same. We decided to carry out our research within the same national context while selecting several different municipalities for our empirical work. All 13 included municipalities are members of Swedish Cycling Cities – an organisation consisting of 31 municipalities and four regions, working consciously for increased and safer cycling. Overall, we contacted all 31 municipalities for a request of conducting interviews with planners who deal with cycling. The 13 municipalities who responded to our request were the ones we interviewed. We e-mailed the person who answered our request since the request was already forwarded to the planner who deals with these issues. After that we booked dates for the interview and conducted the interview via Teams with video and voice recording.

We interviewed one planner per municipality, resulting in 13 interviews. The interviews followed a semi-structured interview guide (see appendix) (Flick, 2006), where we included theory-driven questions inspired by the capacity framework, but still also providing opportunities for reflection and exhaustive answers. Thus, the interview guide focused on different dimensions of capacity that the planners experience in the implementation of local cycling plans and strategies. The interviews were conducted during May and August 2019 and lasted between 30 and 45 minutes. All interviews were recorded and fully transcribed, resulting in 99 pages of transcripts.

The semi-structured nature of the interviews allowed the interviewees to steer the discussions towards issues they found important. As the interviews were conducted, the answers, gradually became more and more repetitive. Therefore, a different kind of knowledge or new knowledge could not be gained by conducting more interviews. This is a very common aspect in interview studies (Maxwell 2004).

As an explanation of qualitative research, it can be said that the focus is on gaining a deeper understanding of complex social processes and that understanding builds on the interpretation of the answers. Thus, the goal of qualitative studies is to generate deeper insights into the analysed processes to develop an understanding of what has influenced the outcome, in this case the planning outcome and the planning processes. It can therefore be concluded that qualitative research generally aims at the understanding of processes and the relations that influence them and not at generalisations (Gubrium and Holstein 1997; Denzin and Lin-

coln 2000; Rubin and Rubin 2005; Cloke et al. 2004). We structured our analysis around institutional capacity theory in order to analyse what capacities the interviewed municipalities have for planning for and implementing of cycling infrastructure and what capacities are lacking.

4.3. Planners' experiences and views on capacity in municipalities

In this section, we will explore how planners in Swedish municipalities experience the capacity-building or lack of capacity to increase cycling. Emerging from our analysis were, as previously mentioned, the following themes that guided the analysis: *infrastructure operation and maintenance; financing; politics; organisation and governance; and citizens*. Although these themes undeniably overlap, we will here explore them separately to show how the planners in Swedish municipalities experience the issue of capacity-building.

4.4. Infrastructure operation and maintenance

Larsson et al. (2022) point out that ageing, structural interventions (e.g. digging to repair and/or change water and sewage pipes), and roots and vegetation, are the most frequent causes of problems on cycle paths. Thus, continuous operation and maintenance of bicycle infrastructure are crucial to avoid degradation, to prevent crashes, and to sustain the level of service and comfort for cyclists. The operation and maintenance of cycle paths in Sweden include activities such as re-paving, re-surfacing, removing roots and vegetation, fixing potholes and cracks (Larsson et al., 2022) and ploughing and sweep-salting during winter-time (Niska & Blomqvist, 2019). The operation and maintenance work are performed both by contractors who are awarded this work through public procurement processes but also by the municipalities. However, some planners state that there is a great lack of knowledge among the performers about what "good" operation and maintenance for bicycling is. This goes for both contractors' and municipalities' own operational management. Planners state that they have no cycling perspective when undertaking the maintenance and that there is a great need for education activities to develop their technical capacity.

Another issue is the access to technical equipment by the municipalities to maintain the infrastructure. This is most apparent in the metropolitan area of Stockholm, where there are in total 26 municipalities with much bicycling commuting crossing the municipality borders. Thus, the technical capacity (or lack of capacity) within a municipality could become very apparent for commuters as there could be a great difference between the municipalities in how well they are technically equipped. In addition, some planners state that there is a lack of personnel within the municipality to develop bicycle infrastructure and there are also problems within some municipalities in receiving tenders on decided cycling infrastructure projects. As a result, the projects are postponed, which could result in consequences for fulfilling bicycle plans.

Even though many planners highlight that maintaining cycling infrastructure is a year-round task, there is an emphasis in the interviews on winter maintenance, and this occupies many municipalities. All municipalities say that they need to take winter maintenance into account and state they have the capacity to perform this task. Municipalities located in the northern part of Sweden are, for obvious reasons, more used to undertaking and organising winter maintenance. Here, the planners see great possibilities in technical developments, and they embrace how technical innovation can make winter maintenance more effective. One municipality participating in an innovation project to develop technical capacity with regard to winter maintenance says that one of the main reasons for this is to obtain a certain degree of technical capacity and thus keep costs down. Of the main issues with regard to winter maintenance relates to what technique the municipalities use when removing the snow and clearing the cycle paths. Traditionally, conventional snow clearance through ploughing and gritting has been used in Swedish municipalities, but over the last few years, sweep-salting has become more popular for winter maintenance (Niska & Blomqvist, 2019). Although

sweep-salting is a more costly technique, a majority of the planners state that they have the technical capacity to use it, although to varying degrees.

4.5. Financial

Although all studied municipalities are members of Swedish Cycling Cities, that does not automatically mean that internally, within their respective organisations, they have the financial support or capacity to work on measures to increase cycling. Many planners state that they are struggling with the financial situation. In some municipalities there could be a temporary financial cut due to the poor economy of the municipality, but in some it is more of an institutionalised situation where there is a limited allocation of financial resources to cycling. Consequently, they do not have the financial capacity to achieve the aim of increased cycling, and the lack of financial resources has the consequence that they do not have the possibility to implement measures in the decided strategies, or that the measures are postponed. As a result, an expansion of the bicycle network or mobility management measures could not be implemented. The lack of financial capacity for operation and maintenance of bicycle infrastructure is also emphasised by several planners. It is also important to underline that the structural design of cycle paths (choice of materials and techniques) differs from one municipality to another (Larsson et al., 2022). The general budget for operation and maintenance has been decreasing steadily in some municipalities. In relation to snow clearance the financial capacity is the greatest obstacle. One planner states that snow clearance is a huge cost for the municipality and highlights that with a greater budget they could have better winter maintenance, sweep-salt more paths, and thus increase make it possible for more people to bicycle during wintertime.

Some planners also highlight that they have tough saving requirements, and in such a situation it is virtually impossible to increase investment in cycling infrastructure. One planner highlights that you need to be innovative when there is a lack of financial resources, and the planner describes a collaboration with the Technical Services Department where they broaden cycle paths when the Technical Services Department dig up the road network for other reasons. In that way the municipality has both saved money and developed the infrastructure. However, the lack of financial capacity is described in some municipalities as an internal positioning and a battle of resources between different political areas and units. In some cases, it is also a battle between means of transport, where infrastructure for public transport has been and continues to be prioritised.

One way to increase the financial capacity of the municipalities is for them to gain access to external funds. It is highlighted by de Loë et al. (2002) that a strong dependence on grants or other external temporary funds could impact a municipality's ability to function independently. Some planners state that they rely to a large extent on external grants as their budget is limited. To increase the budget and keep a high staffing level some municipalities participate in research projects. Municipalities have also succeeded in increasing the budget with governmental funding over several years. This has been of great importance for strengthening the financial capacity. However, several planners call for an increase of governmental funding to achieve increased cycling, and state that the Swedish Transport Administration should allocate many more financial resources to cycling.

Although several municipalities are struggling with their financial capacity to work for increased cycling, some planners convey an image of a good financial situation within certain municipalities. One planner states that there is a political will to improve bicycling and that funding is ear-marked for it, which means that there are always assigned resources for cycling, regardless of whether the municipality has overall savings plans or not. Another planner highlights that they have a good budget for investment in measures and expansion of regional routes, and a decent budget for operation and maintenance. Moreover, the main problem for one municipality is not the financial capacity, where there

are resources available for increasing cycling, but instead limited space is the greatest challenge. Space here refers to street space in the city and how that is allocated to the different transport modes. It is our understanding that taking street space from car traffic and giving it to cycling is often controversial and needs much political courage, because this would be a political rather than a planning question in the first place.

4.6. Politics

The issue of space has become apparent in relation to the political aspects of the capacity of municipalities to increase cycling. According to Loë et al. (2002) political leadership is a key dimension of the capacity of municipalities to provide vision and direction and also to recognise and respond to changes. For this article, political leadership means prioritising cycling to realise a sustainable transport system (Raustorp & Koglin, 2019; Koglin, 2015a, 2015b; Buehler & Pucher, 2011; Banister 2008, 2019). However, previous research has revealed an ongoing battle for space in Swedish cities (Koglin, 2018; Balkmar, 2014, 2018) and many planners say there is a great challenge with regard to the space issue. Planners state that there is a great will from the politicians, but it is problematic in existing urban space to meet all demands and wishes. The space is too small to implement optimal solutions for cycling infrastructure and there will always be a compromise between different modes of transport, not only in relation to the infrastructure for car traffic but also in relation to accessibility for public transport and access to green areas. The conflict between infrastructure for public transport and bicycles is mentioned by several planners – especially when it comes to raised cycle track-crossings and cycle parking close to commuter train stations.

However, although space is a challenging issue for many municipalities, a more difficult issue seems to be the reluctance of politicians to degrade car infrastructure in favour of bicycles. Many planners stress that prioritising cycling at the expense of the car is still not accepted and there is no political courage to make this kind of decision. In almost all studied municipalities there is no explicit aim and/or strategic document to limit and/or restrict car traffic, and many planners experience that the politicians do not want to risk not being re-elected by getting into conflict with motorists, who they believe are a large group of voters. One planner exemplifies the difficulties in changing the conditions between cars and bicycles with a planned measure to promote cycling. The cycling unit within the municipality wanted to close a central square with much parking space as a trial for one week. However, the political management refused because they did not want to mess with the business community and the merchants in the city centre. This was despite the fact that the unit had made inquiries showing that the majority of the revenues for the businesses derived from individuals using sustainable modes of transport, which also corresponds with previous research (Mingardo & van Meerkerk, 2012). However, the lack of vision and direction from politicians applies to a large extent only to existing space. When it comes to developing and planning new areas, the politicians have, according to many planners, found it easier to make decisions that benefit cyclists and limit car traffic.

A political dimension for capacity-building is the extent to which the political leadership is willing and able to form horizontal and vertical linkages beyond the organisation (de Loë et al., 2002). Municipalities have the possibility to overcome or at least reduce obstacles through establishing these kinds of linkages (Pirie et al., 2004). When it comes to cycling, the formation of horizontal linkages between municipalities is important to reduce the obstacle of having different standards of infrastructure and maintenance. A planner from a municipality in the metropolitan area of Stockholm states that there is great difference in the standards of infrastructure and maintenance between the municipalities, and there are different views on these matters. This could mean for example that some municipalities have more potholes, cracks, uneven cycle path surface and less maintenance during wintertime. Consequently, there has been a lack of political capacity to form horizontal linkages,

and this has become very concrete for biking commuters crossing several municipality borders, who experience a range of different standards of infrastructure and maintenance. However, to a certain degree there exist horizontal linkages between the municipalities and there are common procurements in order to set a common standard. In addition, the organisation Swedish Cycling Cities is an example of the formation of an institutionalised horizontal linkage to achieve a common aim, where cycling planners from local authorities cooperate. Moreover, a horizontal linkage between municipalities has also been established to discuss measures and exchange ideas on how to increase cycling.

Within the municipalities' borders the cycling network consists of both local and national roads where municipalities have the responsibility for funding and maintaining urban and local roads while national roads are owned and maintained by the Swedish Transport Administration. Many planners describe the way the bicycle network is organised as a great obstacle to developing a coherent and comprehensive network. The main issue here for many municipalities is the difficulty in forming vertical linkages with the Swedish Transport Administration. Planners highlight that the national agency in theory should have the possibility to develop a good infrastructure, and one of the most important issues is to connect and standardise the local and national paths and develop a common view of what needs to be done. However, according to the planners, the national cycle network has many shortcomings and there is a lack of commitment from the Swedish Transport Administration, in terms of both financial and personnel resources. Some planners also experience long and costly processes when dealing with the national agency. In some municipalities, the greatest obstacle to increased cycling is that you cannot reach all smaller urban areas outside the city centre as there is a state-owned road network linking them and the Swedish Transport Administration are proceeding very slowly in their work on developing the national cycling paths. Thus, there is a disconnection between municipal and state-owned cycling infrastructure and there is a lack of vertical linkages between the municipalities and the Swedish Transport Administration, which has consequences for capacity.

4.7. Organisation and governance

The institutional capacity through institutional arrangements and through institutional environments influences the capacity-building in municipalities (Loë et al., 2002). When it comes to institutional arrangements, all studied municipalities have politically decided cycle plans or strategies. However, there seems to be a great difference between the municipalities with regard to content and in what way the municipality uses the strategy as a capacity-building instrument. Some plans/strategies include a defined objective for the proportion of cycling traffic by a certain year, while others only have an aim of increased cycling. One planner states that the cycle plan within the municipality is not that extensive and there is a great need for the planners to make their own interpretations and prioritisations, whereas another planner states that the municipality needs to revise the cycle plan to take a clearer stance on the role of the bike as a means of transport. In addition, in one municipality a planner states that there is no organisational consciousness about the strategy and thus there is a great challenge to get the whole organisation to work in the same direction. Similarly, a planner in another municipality states that there are steering documents within the municipality that are contradictory, which could lead to problems realising the objective of increasing the proportion of cycling.

There are also other plans and strategies within the municipalities that both explicitly and implicitly have an impact on the aim of increased cycling and the (in)capacity of the municipalities. One of these is the comprehensive plan, which is regulated by the Swedish Planning and Building Act and has a central role in the municipalities' work to formulate strategies for long-term sustainable development. One planner mentions the comprehensive plan as an important tool as it stipulates that the city should grow and densify within a 5 km radius from

the large target points: the city centre, the university area, and the hospital area. This should reduce dependency on the car for the citizens and instead promote increased cycling. Thus, the comprehensive plan could impact the institutional capacity within the municipalities. However, in none of the studied municipalities is there a politically decided strategy for reduced car travel, and many planners mention car parking strategies and parking policies as great obstacles and as examples of how a lack of strategies and plans can reduce the local capacity. One planner states that at the cycle unit they have developed a travel policy for the whole municipality including municipally-owned companies and trusts which comprise many workplaces, although it is not their responsibility to do so. In one municipality they have even, according to the planner, developed a cycling parking guide and the guide has been distributed to property owners in order to develop and create good conditions for parking.

When it comes to the question of the institutional environment, the Planning and Building Act provides the municipalities with the opportunity to include not only cars in their parking policies but also bikes. And in connection to development of new housing this must be done "to a reasonable extent" ([National Board of Housing, Building and Planning, 2020](#)). However, one planner highlights that it is still accepted when building new housing with 100 apartments to develop a car parking garage with 80 parking spaces, but it would not be accepted to allocate half of the parking space to bikes. Another planner shares the view and states that none question parking for cars in the same way as they do for bikes. Among many planners, habits, norms, and strong interests within the municipality in connection to cars are highlighted as institutional obstacles to increasing space for bicycle parking, and these obstacles place great demands on the municipalities' capacity to work for increased cycling.

Within the municipalities, the way cycling is organised also has an influence on the institutional capacity of the municipalities. Within several included municipalities it appears that there is only one unit working on issues connected to cycling while the rest of the organisation to a large degree is decoupled from the issues and sometimes also lacks the will and knowledge to work on issues related to cycling. With only one unit engaging with the issues – and often with limited resources – it becomes difficult to implement the strategic plans. However, in some municipalities the planners state that there is a great deal of cooperation within the municipality and between the units and that the municipality has a long-term perspective on the cycle issues. It is also emphasised that there is a broad political consensus that the municipality should invest resources (personnel and financial) in cycling, and that the different units have become more co-operative in the organisation and know what the others are doing and what expertise is available.

4.8. Citizens

The commitment and involvement of citizens is highlighted by [Loë et al. \(2002\)](#) to improve the municipalities' capacity to realise and implement decided strategies and objectives. Measures that the authors highlight are communication, public education, and outreach programmes. Most of the studied municipalities are trying to increase their capacity through these kinds of measures. When it comes to communication, some municipalities state they have institutionalised forums to enable citizens to ask questions, comment, and get inspiration and knowledge concerning how the specific municipality and other municipalities are working to increase cycling. In one municipality it is also highlighted by the planner that they interviewed citizens as part of their process of developing a new cycling plan. Common to the different strategies is that they all seek not only to inform but also to involve the citizens, and seek their consultation on important issues concerning cycling, thereby increasing the social capacity.

The use of social media such as Instagram and Facebook is a common measure to create awareness about the positive outcomes of increased cycling. However, it is emphasised that it is difficult to find the right

target group in a positive way. Posts on Facebook often result in a poor response, with many negative comments and complaints, whereas likes on Instagram do not go viral. One planner states that the overall cycle group in the municipality is small, is not that loud and does not have high demands. This contrasts with motorists in many municipalities that seem to have a relatively implicit influence on the local politicians. However, there are planners who stress that the municipality has engaged citizens who think it is of great importance that the municipality raises cycling issues.

In relation to public education and outreach programmes there is ongoing work to strengthen the social capacity through these measures. Cycle flea markets and auctions are organised to allow more citizens to have access to a bike. Many municipalities also seek to educate people – mainly through schools. The school is highlighted as an important space to create awareness and influence children about specific (cycling) behaviour at an early age. In addition, school personnel and parents are also highlighted as important target groups. Programmes including free access to different types of bicycles (electric bikes, long tail, cargo bikes, folding bikes, etc.) and projects directly targeted at the school personnel have been implemented. However, many planners experience difficulties in communicating with schools and find it challenging to get access to them. The possibility to initiate collaboration depends to a large degree on having a benevolent principal and the necessary will and engagement in the school. Moreover, in some municipalities there also seems to be great resistance from parents. Policy measures such as removal of car parking and car-free zones in connection to schools have been criticised. Thus, no interest in being involved in bicycle promoting activities has an influence on the municipalities' social capacity. In addition, there is a lack of resources within the municipalities to work on these kinds of issues, and they become questions only for the traffic unit and no other unit takes the responsibility. This of course also influences the municipalities' capacity to increase cycling.

5. Concluding discussion

This article seeks to explore and analyse the capacity in Swedish municipalities to implement measures for increased cycling. Regardless of the type of municipality or its location, it is important that municipalities – which often own much of the municipal road network and are responsible for drawing up overviews and detailed plans – work on improving and developing opportunities for cycling as a mode of transport. Overall, this study has given insights into a variety of possibilities, obstacles and challenges that cycling planners meet in their efforts to increase cycling in Swedish municipalities. Based upon our work, an overarching conclusion is that the capacity, or lack of capacity, differs from municipality to municipality. While some municipalities cover many (or all) of the capacity dimensions, others have great challenges, even though all municipalities are members of a network – the Swedish Cycling Cities – aiming for increased cycling. The differences between the municipalities touch upon all capacity dimensions proposed by [Loë et al. \(2002\)](#). However, the financial and political dimensions are the two most important dimensions dividing the municipalities – and both dimensions have a large impact on the municipalities' capacity to achieve the common aim of increased cycling. The size of allocated budgetary resources (large or small) and the fact that some municipalities need to obtain external funding in order to fulfil cycling plans and strategies are issues that certainly influence the local capacity. In addition, and with a close connection to the financial dimension, there is the political capacity, where a strong car norm still seems to be present. One example of this is the fact that improving and developing cycling infrastructure at the expense of cars in existing urban space is problematic. Also, measures to make it more difficult to drive through areas by using reduced speed limits, one-way streets, as well as car-free zones that would make it easier to cycle, are ways of prioritising cycling. However, for political reasons, such measures are unfortunately rarely implemented. Nevertheless, there are considerably better opportunities to prioritise cycling

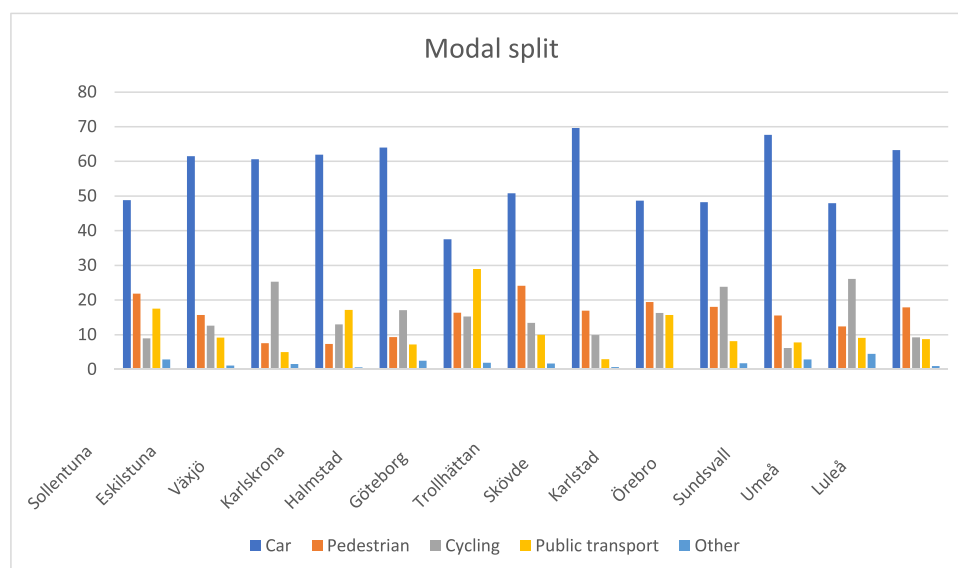


Fig. 1. Modal split of the investigated municipalities.

Source: National Travel Survey Sweden, 2019/2020

during new housing developments, as ingrained habits and routines that are difficult to change have not yet become established. This could be seen as an opportunity to improve the cycling infrastructure in Swedish municipalities, at least in new development projects.

The work of achieving increased bicycling is not connected to only one capacity dimension or only one municipal department. The work is much more integrated between the capacity dimensions and between the different municipal departments that have a responsibility for one or several areas (e.g. mobility management, strategies and action plans, operation and maintenance, financing, local traffic regulations) that are of great significance to achieve increased bicycling. Thus, there needs to be clear and integrated cooperation within municipalities and between bordering municipalities as well as with relevant actors at regional and national levels.

In many of the included municipalities there is a lack of political courage to implement policies that promote increased cycling, and additional financial and human resources are probably needed in those municipalities to improve the local capacity. This challenge has also been identified in previous studies by Koglin (2013, 2015b) and Koglin and Pettersson (2017). Planners and officials are often aware of the problem and of what is required to enable increased cycling or create a sustainable transport system. However, there is often a lack of political will. It became clear from this article that to develop and implement measures to increase cycling, the importance of cars needs to be toned down in strategic planning and policy documents, and there needs to be a sharper focus on sustainable transport, particularly cycling.

From this study it appears that municipalities located in metropolitan areas have a greater capacity to develop horizontal linkages with other municipalities as the cycle network is connected to a greater degree than in municipalities outside the metropolitan areas. Common procurements and sharing of technical equipment are examples of increasing the capacity, although there are still issues that remain to be dealt with to create a cycle network that is developed, operated, and maintained in a standardised way. The apparently great challenge for municipalities of creating vertical linkages and cooperation with the Swedish Transport Administration to create a coherent bicycle network is reducing municipalities' capacity. The Swedish public road network organisation with a divided responsibility for funding, operating, and maintaining the cycle network between municipalities and the Swedish Transport Administration creates challenges and obstacles for planners as they attempt to achieve local objectives. And with no (or a great lack of) institutional cooperation between the national and local levels, the aim of promoting increased cycling becomes difficult to achieve. Greater consensus

and collaboration between municipalities and the Swedish Transport Administration must be achieved to fulfil national and local policy aims on cycling. This is particularly important in municipalities and regions in which the Swedish Transport Administration owns much of the road network.

We believe that many of the obstacles are not only occurring in Sweden, but also in other European countries. The planning systems in Europe are rather similar, although of course national differences exist. Thus, the results could also offer insights or at least food for thought about the situation in other countries. Although cycling is a much more dominant mode of transport in Copenhagen, which is often considered to be more a bike-friendly city compared to many cities in Sweden, barriers for planning strategic cycling infrastructure exist. Barriers are often associated with the political courage and will to decrease car use, something almost all cities in Europe (and in fact the world) struggle with. In this sense, the results of this study are not really surprising but offer a deeper understanding of what is important in other cities outside Sweden. The fact that it is often easier to increase cycling as long as it does not interfere with car traffic is not only a problem in Sweden, but in many other countries as well (Henderson & Gulsrud, 2019; Koglin 2020; Freudendal Pedersen 2015a, 2015b; Koglin et al., 2021).

Generally, it can be concluded that this article shows that there is great desire, knowledge and understanding among planners and officials in Sweden in terms of how to create a strategic cycling infrastructure. These factors could form the basis of a strategic cycling infrastructure in Swedish municipalities that contributes to increased cycling and reduced car traffic, thereby bringing the transport systems one step closer to achieving a fossil-free transport system. However, the lack of political will to break free from the car norm is an important issue that planners alone cannot tackle. There needs to be a political and societal transition in mobility norms away from the car and towards sustainable modes of transport, not least cycling.

In terms of future research, we believe it is of importance to further look into the cycling mainstreaming of the different planning agencies, like national, regional, and local planning offices. More focus should also be directed towards the organisation and planning of cycling in semi-dense and rural areas as there has been and is an emphasis on cycling in the urban context. Moreover, more research on the dominance of automobile systems in our cities is needed in order to shed light on how that affects planning for cycling infrastructure. If we want to create sustainable transport systems it is of importance to decrease car use and the impact cars have on our societies for a proper transition towards cycling futures Fig. 1.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

The authors would like to the reviewers for their helpful comments, Royal Institute of Technology Vinnova (grant number 2015-03501) for financing the study and Anchor English for proofreading the article.

Appendix Interview guide

0 Introduction to the Interview

This is a study where we conduct telephone interviews with the members of the organization "Swedish cycling cities", i.e., public organizations that themselves emphasize that they are at the forefront of the work with cycling in Sweden.

The purpose of the study is to investigate what you consider to be important measures to increase cycling, based on your knowledge, experience and perceptions. And, the three measures that you assess are the most important.

In the interview, we will therefore focus on important measures to increase cycling.

We also want to know which of these important measures for increased cycling that you in your organizations have previously implemented and which you are working on today, and plan to implement in the near future.

Finally, we also want to know what obstacles and opportunities you believe exist to implement these important measures, in the way, and to the extent that you believe are necessary for cycling to increase significantly.

Background issues

Education?

Age?

Gender?

How long have you been active in the organization?

Current post?

How long have you worked with cycling within the organization?

How is the work with cycling organized within your municipality / city / region?

What responsibilities, role and tasks around cycling do you have today?

Describe how you think the conditions for cycling are in the municipality / city / region? What are your strengths / weaknesses?

Does the municipality / city / region have a goal of increased cycling? What / which?

Important measures for increased cycling

What do you think are important measures to increase cycling? Justify why these are important.

List the different measures and motivate them one at a time. Take your time!

Which three of these measures do you think are the most important for increasing cycling? Rank from one to three (one most important, two second most important, etc.). Motivate!

Important measures for increased cycling that are worked on in the own organization

Which of the important measures - including the top three - that you have talked about have you previously implemented and / or are working with today in your organization? As well as planning to implement in the near future?

What important measures have you not implemented, nor do you plan to implement?

In your opinion, what governs which measures for increased cycling are selected and implemented, or not, in your organization?

Obstacles and opportunities to decide on and implement important measures for increased cycling

What obstacles and opportunities do you think exist in your organization to decide on and implement the important measures you have mentioned (theme 2)? And in that way, and to the extent that you consider it necessary for cycling to increase significantly?

Obstacles and opportunities, we believe, can be many different things, such as working hours, resources / budget, competence, political will, governing documents, legitimacy and priority within the administration, cooperation, and collaboration within and outside one's own organization, or other.

Obstacles & opportunities regarding:

A,

B,

C,

Etc.

(Review each of the key actions listed under theme 2)

Other

Is there anything else you want to address that you think we should know about issues and the work with increased cycling?

References

- Aldred, R., Watson, T., Lovelace, R., & Woodcock, J. (2019). Barriers to investing in cycling: Stakeholder views from England. *Transportation Research Part A*, 128, 149–159.
- Aretun, A., & Robertson, K. (2013). *Ökad cykling: Professionella utmaningar och hinder i den lokala transportplaneringen*. The Swedish National Road and Transport Research Institute.
- Balkmar, D. (2014). Våld i trafiken: om cyklisters utsatthet för kränkningar, hot och våld i massbilens tidevarv. *Tidskrift för genusvetenskap*, 35(2–3), 31–54.
- Balkmar, D. (2018). Violent mobilities: men, masculinities and road conflicts in Sweden. *Mobilities*, 13(5), 717–732.
- Banister, D. (2019). The climate crisis and transport. *Transport Reviews*, 39(5), 565–568.
- Banister, D. (2008). The sustainable mobility paradigm. *Transport Policy*, 15, 73–80.
- Buehler, R., & Pucher, J. (2011). Sustainable Transport in Freiburg: Lessons from Germany's Environmental Capital. *International Journal of Sustainable Transportation*, 5, 43–70.
- Cloke, P., Cook, I., Crang, P., Goodwin, M., Painter, J., & Philo, C. (2004). *Practising Human Geography*. London: SAGE Publications Ltd.
- Cox, P., & Koglin, T. (Eds.). (2020). *The politics of cycling infrastructure: Spaces and (in)equality* (eds.). Bristol: Policy Press.
- de Loë, R., di Giandomasso, S. E., & Kreutzweiser, R. D. (2002). Local capacity for ground-water protection in Ontario. *Environmental Management*, 29(3), 217–233.
- Denzin, K. Norman, & Lincoln, S. Yvonne (2000). Introduction: The Discipline and Practice of Qualitative Research. In Denzin, & Lincoln (Eds.), *Handbook of Qualitative Research* (eds.). London: SAGE Publications Ltd.
- Emanuel, M. (2012). *Trafikslag på undantag – Cykeltrafiken i Stockholm 1930–1980*. Stockholm: Stockholmia Förlag.
- Emanuel, M. (2020). Conflictual Politics of Sustainability: Cycling Organisations and the Øresund Crossing. In T. Koglin, & P. Cox (Eds.), *The politics of cycling infrastructure: spaces and (in)equality* (eds.). Bristol: Policy Press.
- Flick, U. (2006). *An introduction to qualitative research* (3rd ed.). Sage: London.
- Franks, T. (1999). Capacity building and institutional development: reflections on water. *Public Administration and Development*, 19(1), 51–61.
- Freundtendal-Pedersen, M. (2015a). Cyclists as Part of the City's Organism: Structural Stories on Cycling in Copenhagen. *City & Society*, 27(1), 30–50.
- Freundtendal-Pedersen, M. (2015b). Whose Commons are Mobilities Spaces? – The Case of Copenhagen's Cyclists. *ACEME: An International E-Journal for Critical Geographies*, 2015, 14(2), 598–621.
- Gargan, J. J. (1981). Consideration of local government capacity. *Public Administrative Review*, 41(6), 649–658.
- Gubrium, F. J., & Holstein, A. J. (1997). *The new language of qualitative Method*. Oxford: Oxford University Press.
- Grindle, M. S. (1996). *Challenging the State: Crisis and Innovation in Latin America and Africa*. Cambridge: Cambridge University Press.
- Grindle, M. S., & Hilderbrand, M. E. (1995). Building sustainable capacity in the public sector: what can be done? *Public Administration and Development*, 15(5), 441–463.
- Hamdy, A., Abu-Zeid, M., & Lacirignola, C. (1998). Institutional capacity building for water sector development. *Water International*, 23(3), 126–133.
- Henderson, J., & Gulsrud, N. M. (2019). *Street Fights in Copenhagen: Bicycle and Car Politics in a Green Mobility City*. London: Routledge.
- Haustein, S., Koglin, T., Nielsen, T. S., & Svensson, Å. (2020). A comparison of cycling cultures in Stockholm and Copenhagen. *International Journal of Sustainable Transportation*, 14(4), 280–293.
- Honadle, B. W. (2001). Theoretical and practical issues of local government capacity in an era of devolution. *The Journal of Regional Analysis & Policy*, 31(1), 78–90.
- Hållbar stad (2016). "Kommuner tar tåten i klimatarbetet" Accessed via <https://www.hallbarstad.se/bridging-the-gap/kommuner-tar-taten-i-klimatarbetet/10> October 2021.

- Ivey, J.L., Smithers, J., de Loë, R.C., et al., (2004). Community capacity for adaptation to climate-induced water shortages: linking institutional complexity and local actors. *Environmental Management*, 33(1), 36–47.
- Ivey, J.L., de Loë, R., Kreutzweiser, R., Ferreyra, C., et al., (2006). An institutional perspective on local capacity for source water protection. *Geoforum*, 37(6), 944–957.
- Koglin, T. (2013). *Vélobility – A critical analysis of planning and space*. Doctoral Dissertation, Lund University, Department of Technology and Society. *Transport and Roads*, 284 2013, Bulletin –.
- Koglin, T. (2015a). Organisation does matter – planning for cycling in Stockholm and Copenhagen. *Transport Policy*, 39, 55–62.
- Koglin, T. (2015b). Vélobility and the politics of transport planning. *GeoJournal*, 80(4), 569–586.
- Freudendal-Pedersen, Hartmann-Petersen Koglin, T. (2018). Urban velomobility and the spatial problems of cycling. In Perez Fjalland (Ed.), *Experiencing Networked Urban Mobilities* (pp. 112–118). New York: Routledge.
- Koglin, T. (2020). Spatial dimensions of the marginalisation of cycling – marginalisation through rationalisation? In *The Politics of Cycling Infrastructure: Spaces and (in)equality* (pp. 55–71). Bristol: Policy Press.
- Koglin, T., & Mukhtar-Landgren, D. (2021). Contested values in bike-sharing mobilities – A case study from Sweden. *Journal of Transport Geography*, 92, Article 103026.
- Koglin, T., & Pettersson, F. (2017). Changes, problems and challenges in Swedish spatial planning. *Sustainability*, 9, 1836.
- Koglin, T., & Rye, T. (2014). The marginalisation of bicycling in Modernist urban transport planning. *Journal of Transport & Health*, 1(4), 214–222.
- Koglin, T., te Brömmelströet, M., & van Wee, B. (2021). Cycling in Copenhagen and Amsterdam. In Pucher, & Buehler (Eds.), *Future of Cycling* (pp. 347–370). Cambridge: MIT Press.
- Larsson, M., Niska, A., & Erlingsson, S. (2022). Degradation of Cycle Paths—A Survey in Swedish Municipalities. *CivilEng*, 3, 184–210.
- Lindkvist Scholten, C., Koglin, T., Hult, H., & Tengheden, N. (2018). *Cyklens plats i den kommunala planeringen – En fråga om status och hierarki* (p. 5). K2 WORKING PAPERS. 2018.
- Maxwell, J. A. (2004). *Qualitative Research Design – An interactive approach*. London: Sage Publications.
- Mingardo, G., & van Meerkeek, J. (2012). Is parking supply related to turnover of shopping areas? The case of the Netherlands. *Journal of Retailing and Consumer Services*, 19, 195–201. [10.1016/j.jretconser.2011.12.001](https://doi.org/10.1016/j.jretconser.2011.12.001).
- Ministry of Trade and Industry (2017). *En nationell cykelstrategi för ökad och säker cykling - som bidrar till ett hållbart samhälle med hög livskvalitet i hela landet*. [A national cycling strategy for increased and safe biking – that contributes to a sustainable society with a high quality of life throughout the country] Regeringskansliet
- Ministry of Trade and Industry (2018). *Effektiva, kapacitetsstarka och hållbara godstransporter – en nationell godstransportstrategi*. [Efficient, high-capacity and sustainable freight transport - a national freight transport strategy] Regeringskansliet
- National Board of Housing, Building and Planning (2020). “Planera för cykelparkering.” [Planning for bicycle parking] Accessed via <https://www.boverket.se/sv/PBL-kunskapsbanken/Allmant-om-PBL/teman/parkerin-g-hallbarhet/verktyg/cykel/10> October 2021
- Niska, A., Nilsson, A., Wiklund, M., Ahlström, P., Björketun, U., Söderström, L., & Robertson, K. (2010). *Metoder för skattning av gång-och cykeltrafik: kartläggning och kvalitetsbedömning*. VTI.
- Niska, A. & Blomqvist, G. (2019). Sweep-salting of cycleways in theory and practice. Experiences from evaluations performed in Swedish municipalities. VTI rapport 1005
- Pirie, R.L., de Loë, R.C., & Kreutzweiser, R. (2004). Drought planning and water allocation: an assessment of local capacity in Minnesota. *Journal of Environmental Management*, 73(1), 25–38.
- Raustorp, J., & Koglin, T. (2019). The potential for active commuting by bicycle and its possible effects on public health. *Journal of Transport & Health*, 13, 72–77.
- Rubin, J. H., & Rubin, S. I. (2005). *Qualitative Interviewing – The Art of Hearing and Data*. London: SAGE Publications Ltd.
- The Swedish Transport Administration (2011) *Ökad och säker cykling – Redovisning av regeringsuppdrag* Case no.: TRV 2011/19633
- Trafikanalys. (2015). *Cyklandets utveckling i Sverige 1995–2014 – en analys av de nationella resvaneundersökningarna*. Stockholm: Rapport 2015: 14, Trafikanalys.
- UN (2021). Economic and Social Council. Draft Pan-European Master Plan for Cycling Promotion