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Institutional barriers for promoting active mobility in Northern European cities

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Abstract

Transport systems in many cities remain heavily car-centric, resulting in numerous problems. In response, active mobility, such as walking and cycling, has gained increasing attention in planning efforts due to its wide-ranging benefits. Nevertheless, the car continues to dominate as the primary mode of transport in many cities, contributing to persistent issues. Despite growing efforts to promote active mobility, several barriers remain. Political reluctance, fragmented planning processes, limited organizational resources, and stakeholder dynamics often hinder the prioritization of active mobility over motorized transport. Moreover, the challenges of resource limitations and opposition to reallocating public space from car infrastructure to active mobility further complicate these efforts. These challenges are exacerbated by institutional structures, governance fragmentation, and climatic conditions, creating significant obstacles to the successful implementation of active mobility strategies.

This thesis examines the institutional barriers hindering the promotion of active mobility in four cities: Kalundborg, Lahti, Umeå, and Hamburg-Altona. These cities, historically designed for car use, have long-standing car dependency and face additional challenges due to their high-altitude locations, where harsh winter conditions create further obstacles. Despite this, they have started recognizing the environmental and personal wellbeing benefits of active mobility. Each of these cities has been involved or was previously involved, in the BATS project, which aims to prioritize active mobility in urban and transportation planning. The study employs semi-structured interviews, a survey, and a workshop to identify the current barriers to advancing active mobility initiatives.

The findings suggest that although active mobility is receiving more attention from planners and politicians, significant institutional barriers persist. Four key factors – political, organizational, resource-related, and stakeholder – were identified as the primary obstacles to active mobility development. Political support plays a critical role in the development of active mobility and often determines whether active mobility initiatives can be implemented. Most interviewees acknowledged a shortage of resources as a major challenge in advancing active mobility projects. Organizational and stakeholder barriers also play a significant role, particularly during the implementation phase.

Keywords Active mobility, sustainable mobility, institutional barriers, policy implementation, cycling, walking, transport and urban planning

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Preface and acknowledgements

I want to thank Professor Miloš N. Mladenović for your advice and guidance for the past 9 months.

I want to thank Zhengzheng for your companionship in Paris. I will always remember the days we spent in the library and the wonderful moments we shared.

I also want to thank myself for all the solitary days spent writing. Despite breaking down so many times and the possibility that this thesis may not fully meet my expectations, I made it to the end.

Xin Chen

Symbols and abbreviations

Abbreviations

AM	Active Mobility
BATS project	Baltic sea region- Active Mobility Solutions – in darkness and all-weather conditions

1 Introduction

Despite generating tons of problems such as pollution, congestion, health issues, and social exclusion, automobility is still the dominant transport modes in many countries (Haustein, et al., 2020). To solve these issues, active mobility has gained increasing attention as a new mode of transport in transport systems due to its low-cost, low-polluting, health-improving, and space-effective characteristics (Handy et al., 2014). Given the various benefits of active mobility, more cities have realized the potential of active mobility and started or increased their investment in active mobility. Paris has taken proactive measures by building bike lanes and car-free zones to become one of the most walked cities in the world (Wyman, n.d.). However, cities still face numerous challenges to increase the share of active mobility users and to normalize it as a daily mode of transport.

In many countries, walking and cycling are commonly categorized as "non-motorized transport", "active mobility", or "sustainable transport" (Lindelöw et al., 2016). Walking is often viewed as "unplanned" mode of transport, which remains an exception in planning activities. In Sweden, three distinct trends shape the planning of walking and cycling. First, walking and cycling are frequently combined into a single transport category (referred to as "Gc-trafik in Swedish), a standard approach in Swedish transport planning. Second, cities like Malmö and Lund are beginning to separate walking from cycling in their future planning strategies, treating walking as its own mode of transport. Lastly, walking is overlooked as a tool for encouraging modal shift, unlike cycling and public transport, which leads to its exclusion from certain aspects of transport planning (Lindelöw et al., 2016).

To promote year-round active mobility, it is essential to normalize it within the public consciousness, which needs planners and politicians' efforts. While improving the active mobility facilities is a necessary step, it is only a foundational measure and not the root solution. The deeper challenge lies in understanding the institutional barriers that prevent adequate resources and support for active mobility planning. In Northern European cities, where climate conditions add complexity, these barriers are particularly significant. Planning for active mobility is inherently a political issue, involving the navigation of competing interests, policy priorities, and resource allocation. Therefore, to effectively promote active mobility in these regions, it is crucial to identify and address the deeper institutional obstacles that hinder the necessary investments and comprehensive solutions. In this thesis, the focus is not to find out the difference when conducting walking and cycling planning, or to discuss the importance of walking and cycling infrastructure can do to pedestrians and cyclists. Additionally, the difference between the planning

process for walking and cycling is not the focus as well. Instead, the focus lies on finding out the barriers which lie within the institutions.

It is beneficial to identify the specific barriers present in different cities, as this allows for addressing a broader range of questions related to institutional limitations in promoting active mobility. This thesis investigates four case cities: Hamburg, Lahti, Umeå, and Kalundborg. In Hamburg, the rate of household car ownership is relatively low compared to the national average in Germany, but the proportion is still high, with 57% of household owning a car (Follmer et al., 2020). Kalundborg and Lahti, also possess a high proportion of car trips, accounting for nearly half of traffic activities (Høj et al., 2022; Väkeväinen, 2023). Although Umeå has a lower rate of car ownership compared to the other three case cities, it still takes up 38%. These surveys imply that these case cities still need to improve their environment for active mobility.

The research questions for this thesis are three-fold:

1. What are the challenges that planners encounter when promoting year-round active mobility in existing literature and in case cities?
2. What countermeasures planners consider dealing with these barriers?
3. What specific challenges does each city face, and what are the commonalities and differences among them?

The master's thesis is structured as follows. The next chapter presents a review of literature on identified barriers of promoting active mobility. Chapter 3 lists the research methodology. Chapter 4 presents the results from the interviews, workshop, and survey. Chapter 5 presents the discussion from the findings and offers the recommendations for overcoming these barriers. Finally, Chapter 6 offers the conclusion of this thesis.

2 Literature review

2.1 Barriers to promoting active mobility

2.1.1 Political factors

Research has identified political factors in different ways. *Table 1* is the summary of different literature identifying "political factor".

Table 1 Literature summary on political barriers

Source	Category of political barrier	Explanation
(Rietveld & Stough, 2005)	Institutional and political	• Problems in the cooperation between organizations • Conflicts among different policies
(Wang, 2018)	Political and institutional barriers	• Lack of political support • Lack of travel behavior evaluation • Time-consuming negotiation with private stakeholders on space distribution • Lacking long-term and integrated planning • Landscape conflicts between AM infrastructure and local landscape
(Robartes et al., 2021)	Department	• Approval • Standards • directions
	Politics	• Public opposition • Lack of political will • Policy barrier
	Government	• Approval • Coordination • Priorities • Lack of staff/support
(Aldred et al., 2019)	Lack of political leadership	• Lack of high-level political leadership • Conflict with existing political agendas • Fear of public backlash
(Cole et al., 2010)	Political commitment and institutional practice	• Lack of high-level political commitment • Lack of funding • Lack of organization support • Lack of toolkit, community education

		• Lack of collaboration with non-traditional stakeholders

All modes of transport are shaped by power dynamics; where motorized transport is prioritized, walking and cycling are often sidelined and marginalized in political decision-making processes (Aldred, 2012; Balkmar, 2020; Böhm et al., 2006; Furness, 2010; Smith, 2016). Steffen Böhm views argues that automobility is inherently political, as it embodies power structures and contested versions of a collective "good life" (Furness, 2010). Given that active mobility competes for space with motorized vehicles, it too becomes inherently political (Wilson & Mitra, 2020).

Based on previous research, current transport discourse politically supports car-based transportation over bicycle transportation (Bonham & Cox, 2010; Egan & Caulfield, 2024). Despite these differences, politics still acts as a crucial role in shaping the trends of urban and transportation planning overall. In this thesis, political barriers are referred to:

- Whether active mobility gains the support from the politicians,
- To what degree active mobility agenda is prioritized in government agenda,
- Politicians' attitudes towards active mobility, e.g., disinterest, inaction, risk aversion,
- How political cycle affects AM,
- Whether to have political leading individual/figurehead,
- The willingness to fight against large vote group,
- Reallocation of public space,

In England, variegated and decentralized political structure affects its transport and mobility regime. Although the Greater London Authority oversees metropolitan London, conservative boroughs often maintain car-favorite policies. Local councils are hesitant to adopt pro-active mobility policies, fearing backlash for challenging the dominance of cars voters (Marije De Boer & Caprotti, 2017). Research by Aldred et al. (2019) indicates a lack of high-level political support for active mobility. Politicians, wary of re-election, often avoid publicly supporting AM schemes, as car travel is traditionally linked to economic growth from a traditional view of point (Aldred, 2012). They are more willing to reserve expenditure of political capital to less controversial issues. While they may not openly oppose active mobility, their disinterest and inaction reveal a reluctance to reduce motor vehicle capacity, which remains politically sensitive. Although modal shift is promoted as a goal, there is no clear commitment to increase active mobility trips or reducing car use (Aldred, 2012). The absence of driven individuals and

figureheads, the effects of political support can be weaken (Cole et al., 2010; Harms et al., 2016). Positive examples such as Boris Johnson, actively championed cycling despite opposition. However, the political cycle often acts negatively to the development of active mobility.

In Sweden, political leadership. i.e., the prioritization of cycling to achieve a sustainable transport system, is essential for municipalities to provide vision, direction, and responsiveness to change (Alm & Koglin, 2022). Planners have acknowledged that politicians are willing to promote cycling. However, although a certain level of support has been obtained, issues still exist. First, existing urban structure is limited, making it challenging to accommodate all demands. Secondly, a more profound issue is the political reluctance to reduce car infrastructure in favor of bicycles. The reason is that politicians do not want to make decisions that upset motorists, who are perceived as a large vote base, which eventually causes losing votes. Additionally, not only car drivers, but the business communities also have great power to influence the decision of politicians despite evidence showing that most business revenue came from people using sustainable transport modes.

In Hamburg, Germany, lack of political support is highly emphasized in the promotion of active mobility. Similar to the UK, the political landscape is characterized by a strong horizontal and vertical Politikverflechtung (political entanglement) (Stead, 2001). Different districts have varied attitudes towards promoting active mobility as they have different political majorities (Wang, 2018). Economic considerations play a vital role in political decisions concerning the development of automobility versus active mobility, particularly when freight transport is seen as critical by politicians and economic lobby groups. Insecure road conditions such as blind spots and dangerous accidents hinder cyclists from cycling more.

Reallocating street space from car traffic to active mobility is often controversial and challenging. Shifting urban mobility patterns typically arouse debates over the allocation of power and resources in public space, making it an inherently political issue that requires significant political commitment to resolve (Alm & Koglin, 2022; Balkmar, 2020; Koglin, 2013). In the case of Sweden, urban planning remains largely influenced by a historical legacy in which planners and traffic engineers have prioritized motor vehicles overactive mobility.
In Sweden case, it is still shaped to a large extent by a legacy in which urban planners and traffic engineers have prioritized the motor car at the expense of active mobility (Koglin, 2013).

2.1.2 Planning process/procedure factor

Despite the recent shifts towards greener mobility, planning processes often continue to reinforce traditional mobility patterns, with the car remaining central and dominant (Brown et al., 2009; Koglin, 2017; Lindelöw et al., 2016; Van Der Meulen & Mukhtar-Landgren, 2021). Research in Sweden indicates that active mobility still have not been fully integrated into Stockholm land use and transport planning (Isaksson et al., 2017). Planners often adopt "workaround" solutions that closely resemble the original "optimal" plan as a response to anticipated or actual political resistance (Wilson & Mitra, 2020). This strategy is common when planners and engineers foresee significant opposition, such as concerns over lanes or parking removal. In Sweden, when financial resources are scarce, planners often justify infrastructure by leveraging other projects, like expanding bike paths during roadwork carried out by other departments (Alm & Koglin, 2022).

Active mobility schemes need to be implemented through administrative arrangements. However, there is significant variation among municipalities in both the content of their strategies and how they incorporate these strategies into their administrative frameworks (Alm & Koglin, 2022). Different plans and strategies can shape the future of active mobility, resulting in varying outcomes. For instance, plans with a specific target for increasing the proportion of active mobility by a set year may yield different results compared to those that only aim for a general increase in active mobility. When goals are unclear, achieving desired objectives for active mobility become more challenging. Pucher et al. (2011) highlight the importance of comprehensive, long-term planning, citing Freiburg's sustainable transport policy as a key example. Additionally, flexibility and adaptability are crucial elements in successful planning (Buehler & Pucher, 2011).

Despite the emergence of new strategies to promote active mobility, Balkmar (2020) argues that Swedish national strategies have failed to move beyond the prevailing mobility paradigm or explicitly advocate for interventions to limit car use. This reinforces the argument that transport policy may find it difficult to break away from the existing paradigm, as entrenched path dependencies in policy and planning limit the potential for significant, transformative change (Balkmar, 2020; Isaksson, 2014).

In many cases, the national government delegate much of the responsibility to regional and local governments while simultaneously hindering their efforts through funding limitations and the withdrawal of strategic and legislative support, as seen in New Zealand (Smith, 2016) and Sweden (Van Der Meulen & Mukhtar-Landgren, 2021). In New Zealand government failed to deliver integrated transport policies, while not utilizing the benefits offered

by sustainable transport system (Smith, 2016). Similarly, in Sweden, active mobility has been framed as a regional and local issue, which has diminished the influence of national policy instruments, such as legislation and standardization. (Van Der Meulen & Mukhtar-Landgren, 2021).

2.1.3 Organizational factor

The organization of department significantly influences the social dynamics among planners, shaping power relations that either promote or marginalize active mobility within the planning process (Koglin, 2015a). The structure of active mobility within a municipality can also reflect its capacity to implement such initiatives. As Alm & Koglin (2022) point out, few departments are responsible for active mobility, while others remain largely disconnect from these issues, often lacking the will and expertise to address them. A study in Copenhagen and Stockholm (Koglin, 2015a) highlights how departmental organization creates distinct planning environments. In Copenhagen, where urban and transport planning are housed within the same department, there is a more integrated approach to planning (see *Figure 1*). This approach fosters collaboration across professionals and leads to more effective active mobility solutions. This organizational setup encourages consensus-based decision-making (Koglin, 2015a). In contrast, Stockholm's separation of transport and urban planning into different departments slows knowledge exchange and limits cooperation opportunities, creating power imbalance (see *Figure 2*). Stead (2001) supports this argument, noting that teams working collaboratively across areas such as transport and land use tend to be more effective.

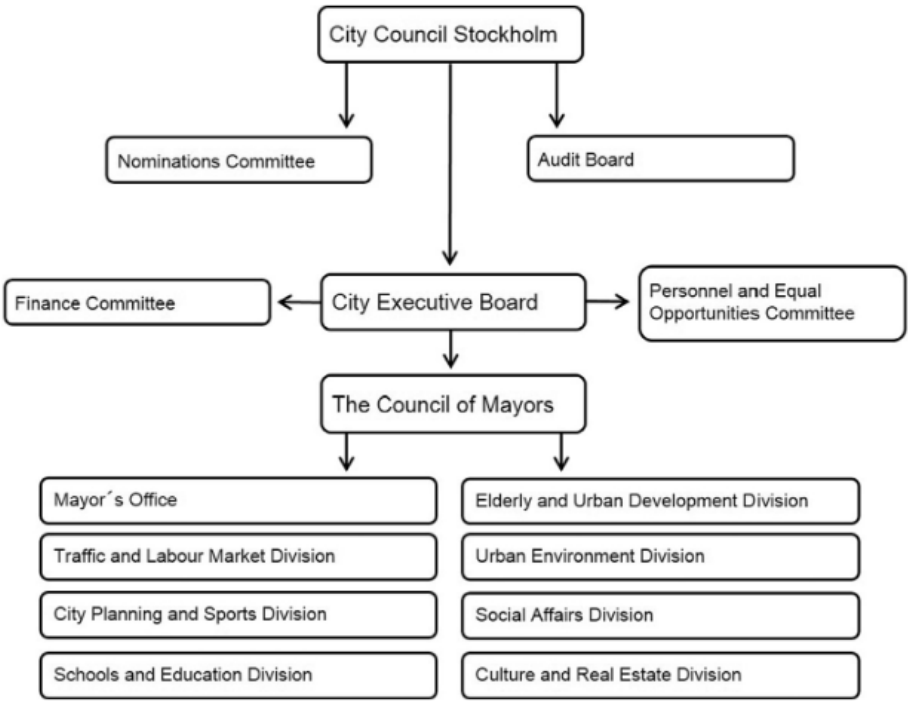

Figure 1 Organizational structure of the City Council Stockholm
Source: (Koglin, 2015a)

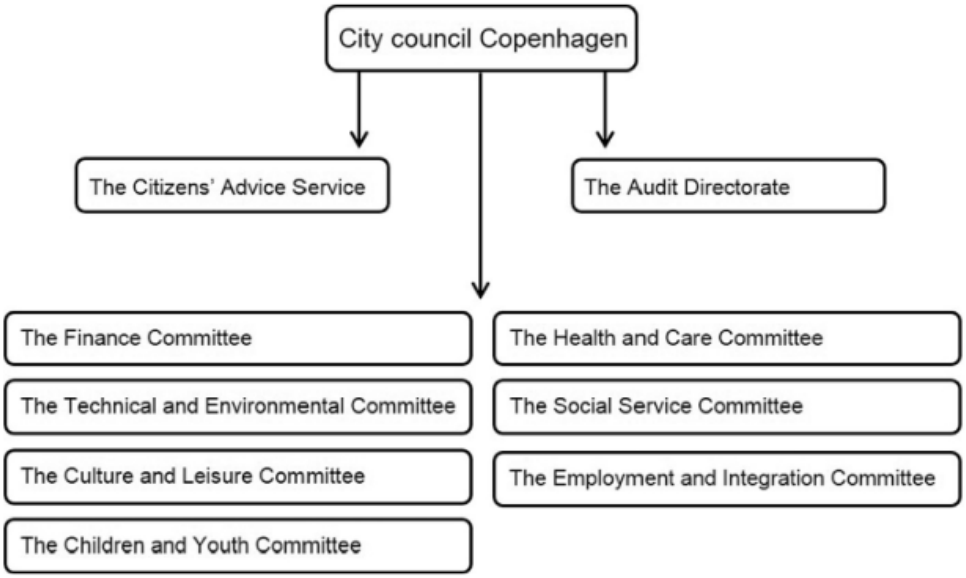

Figure 2 Organizational structure of the City Council Copenhagen
Source: (Koglin, 2015a)

2.1.4 Resource factor

Resource allocation has been a contentious issue in active mobility planning, frequently discussed in the literature (Aldred et al., 2019; Alm & Koglin, 2022; Assunçao-Denis & Tomalty, 2019, 2019; De Loë et al., 2002; Gaffron, 2003; Wilson & Mitra, 2020). A persistent challenge for AM planning is the competition with motorized traffic, as the dominance of automobility in Western transportation culture often politicalizes active mobility. To address this, various detour strategies have been employed to secure AM funding. For instance, in Canada, four key strategies have been identified: 1) leveraging public work projects, 2), utilizing external grants and fundings, 2) pre-emptively re-routing cycling infrastructure, and 4) seeking support from political advocates (Wilson & Mitra, 2020)

The financial allocation between automobility and active mobility often reflects an imbalance, influenced by factors such as economic conditions, institutional disparities, and internal resource competition among different political jurisdictions (Alm & Koglin, 2022). In municipalities that experience harsh winter conditions, the cost of promoting active mobility is further compounded by the need for snow clearance, placing additional strain on financial resources (Scherer, 2023)

The presence of dedicated personnel is crucial for the effective promotion of active mobility. Cities like Calgary and Ottawa have made notable advancements in expanding cycling infrastructure and programs after appointing active transport specialists and creating dedicated cycling units (Assunçao-Denis & Tomalty, 2019). These professionals ensure that cycling is fully incorporated into broader transportation plans, oversee infrastructure maintenance, and implement supportive initiatives, thereby solidifying cycling as a legitimate and essential mode of transportation.

External grants and fundings are also fundamental in the development of active mobility, particularly in cases where significant political or financial support from the government is lacking (Alm & Koglin, 2022; Wilson & Mitra, 2020). Time-limited fundings or grants from higher levels of government can facilitate the promotion of active mobility by allowing politicians to argue that the investment serves the broader community's interests without directly impacting taxpayers. However, reliance on such temporary external funding sources can undermine the long-term sustainability of active mobility initiatives and reduce the capability of a municipality to function independently (De Loë et al., 2002).

2.1.5 Stakeholder factor

The involvement of multiple stakeholders in active mobility planning has been a subject of considerable debate (Harms et al., 2016). Key stakeholders include AM advocacy groups, business owners, local residents, and automobile lobbies, each with varying levels of influence.

Historically, citizen participation has played a significant role in shaping AM policies. Numerous examples demonstrate how grassroots involvement has been a driving force in policy development, sometimes even surpassing the influence of local and regional departments (Assunçao-Denis & Tomalty, 2019; Carr, 2013; Harms et al., 2016; Pucher et al., 2011a). However, despite these successes, citizen engagement can also yield negative outcomes. Some decision-making studies indicate that public involvement can increase costs, cause inefficiencies in implementation, or even lead to counterproductive outcomes (Harms et al., 2016; Irvin & Stansbury, 2004). Moreover, citizen advocacy, particularly when perceived as too vigilant or radical, often faces criticism from regime insiders, such as policymakers, business leaders, and transportation experts, for its polarizing nature (Marije De Boer & Caprotti, 2017).

Businesses stakeholders inherently hold privileged positions in shaping policies. This is because local governments often prioritize economic interests that naturally coincide with business goals, leading to policies that favor automobility (Vigar, 2000). As a result, policies supporting automobility often reflect business interests without substantial resistance. However, individual policy schemes may encounter challenges or resistance when they conflict with immediate community concerns, particularly those of residents and small businesses (Vigar, 2000).

Cycling advocacy organizations have been crucial in advancing cycling initiatives in many cities (Marije De Boer & Caprotti, 2017; Pucher et al., 2011a). In the United States, these groups actively promote the benefits of cycling to build public and political backing (Pucher et al., 2011b). Their lobbying efforts have been vital in securing funding for active mobility programs and infrastructure (Pucher et al., 2011a). Additionally, they organize public events, offer information and training programs, and collaborate with municipal transport departments (Pucher et al., 2011a). These actions emphasize that politicians need coordinated efforts from these non-governmental organizations and various municipal departments to mobilize the necessary support fie such initiatives (Pucher et al., 2011a).

Citizen commitment and engagement are crucial to the successful implementation of AM strategies. De Loë et al. (2002) emphasize the importance of

effective communication, public education, and outreach programs in enhancing municipalities' capacity to realize their AM objectives. In Sweden, have institutionalized forums to facilitate citizen engagement, allowing residents to ask questions, provide feedback, and learn about AM initiatives (Alm & Koglin, 2022). Similarly, in North America, cycling advocacy organizations have been integral—sometimes even more influential than municipal transportation departments—in promoting cycling (Baltes, 2005; Pucher et al., 2011b).

Despite the importance of stakeholder engagement, gaining broad support can be challenging. Pedestrians and cyclists, for example, tend to have a quieter, less influential voice compared to motorists. Schools, often identified as key partners in promoting AM, can also be difficult to engage due to resistance from parents, particularly regarding the creation of car-free zones or the removal of parking spaces (Alm & Koglin, 2022).

2.2 Gaps in the literature

Existing literature on active mobility often focuses on policy frameworks and success stories from larger, well-known cities in Europe, such as Copenhagen or Stockholm, which have been recognized for their progressive cycling and walking infrastructure. However, less attention has been given to the institutional barriers that smaller and mid-sized cities like Kalundborg, Lahti, Umeå, and even Hamburg face in promoting active mobility. Specifically, there is a lack of research exploring how institutional structures, governance fragmentation, and local political will—or the lack thereof—affect the implementation of active mobility initiatives in these cities. Furthermore, while climatic challenges in Northern Europe, such as long winters and snow, are often discussed, how these challenges intersect with institutional hurdles remains underexplored. Understanding the localized barriers in these specific cities, with their unique demographic, geographic, and institutional contexts, is essential to forming a more nuanced view of the difficulties in promoting active mobility across different urban scales.

3 Methodology

This chapter begins by introducing the qualitative framework utilized to examine active mobility (AM) in the chosen case cities. This includes the justification for the chosen cities and their climate, geography, and demography. The chapter then continues by describing the methodology for collecting data on the topic, which includes a questionnaire, workshop, and interview data. The theoretical underpinnings and steps for analysing the data will also be explained.

3.1 Conceptual framework

The framework presented in *Figure 3* illustrates seeks to uncover the obstacles within institutional frameworks that hinder the development of active mobility. The broader societal socio-demographics and culture, alongside geography and climate considerations, provide essential background information that contextualizes the planning environment. At its core, the focus is on understanding the planning culture and the planning process and procedures. These central elements are examined through the lens of several influential systems: the legal and administrative system, organizational capacity, the political system, and stakeholder roles. While interventions and impacts in the city are considered, they primarily serve as design strategies rather than the main focus of the thesis.

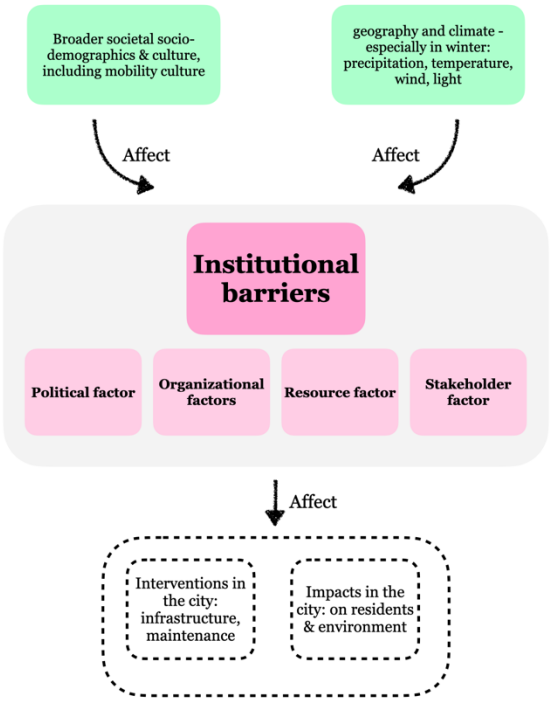

Figure 3 Conceptual framework

3.2 Rationale

To study the institutional barriers in northern European cities, three Nordic cities (i.e., Kalundborg, Umeå, and Lahti) and one German city (i.e., Hamburg-Altona), were selected as case studies. Several factors contributed to the selection of these cities. First, all of them are all involved in the BATS project, with Hamburg-Altona serving as the lead partner. Lahti, however, has considered withdrawing from the project due to political reasons. Second, these cities re located in high-latitude regions, particularly Lahti and Umeå, where long winters pose significant challenges to year-round active mobility. Winter in these areas is typically characterized by rain, snow and limited daylight, conditions that complicate efforts to maintain walking and cycling infrastructure throughout the year. Research has shown that seasonal variation has a noticeable impact on transportation mode choices, with active mobility declining during the wintertime (Bergström & Magnusson, 2003). Third, these cities remain largely car-dependent, and active mobility planning is not consistently considered or prioritized in their government agendas. Nordic counties, despite being geographically and culturally close, often share similar institutional structures and policy-making processes. And Germany is also known for its elaborated administrative process. studying the institutional barriers in these cities offers valuable insights into how a new framework can be developed to identify and address challenges and promote active mobility. While challenges like increasing cycling participation are general, many factors, such as municipal size, road infrastructure, local political conditions, and urban planning priorities, are specific to local contexts (Alm & Koglin, 2022).

BATS project

The BATS (Baltic Sea region- Active Mobility Solutions – in darkness and all-weather conditions) project, led by Hamburg-Altona, is a new initiative under the new Interreg Baltic Sea Region program. Its goal is to equip cities with the insights and tools necessary to promote year-round active mobility ("BATS," n.d.; Projectmanager, 2024). By challenging traditional mobility planning approaches, the BATS project aims to prioritize cycling and walking as central components of urban transport (Projectmanager, 2024). In November 2023, twelve partner organizations from across the Baltic Sea Region gathered in Hamburg's Altona District to officially launch the three-year project, which seeks to place active mobility at the heart of urban planning aimed at placing active mobility—walking and cycling—at the forefront of urban planning.

3.3 Research design

This research applies a qualitative research approach, utilizing multiple data collection methods: semi-structured interviews, a survey, a workshop, and unpublished governmental documents offered by the interviewees. The survey and workshop were conducted by Miloš N. Mladenović, while a more detailed analysis of these methods will be presented in the following chapter. Among these methods, semi-structured interviews serve as the main data collection tool, play two key roles: deepening the understanding of barriers cities face in promoting active mobility, and obtaining expert insights on underexplored or insufficiently explained topics.

For this study, six experts from the four case cities were interviewed, providing valuable contributions to the research findings. Semi-structured interviews are a widely recognized method in qualitative research (DiCicco-Bloom & Crabtree, 2006). They require well-prepared interview protocols that address the key topics of the study (Holloway, 2005), while remaining flexible and reciprocal, allowing interviewers to pose follow-up questions based on the interviewees' responses and creating space for personal expression (Bourgeault et al., 2013; Galletta & CROSS, 2013; Hardon, 2004; Kallio et al., 2016a; Malik & Omar, 2024). The preparation of these interviews involves substantial pre-research, ensuring that questions are informed by prior knowledge (Kallio et al., 2016b).

3.4 Data collection and analysis

3.4.1 Workshop

The workshop, organized by Miloš N. Mladenović in February, included participants from the BATS projects. It began with individual reflection, where participants wrote down their thoughts in response to the following questions:

1. Which challenges sound familiar to you based on your experiences in your municipality?
2. Which challenges you have not thought about before?
3. What are some challenges that are not there in the list?
4. Do you recall some specific events from your own experience? Or someone else's experience that you have heard about?
5. Any other thoughts?

This was followed by group discussions, facilitated by notetakers and facilitators. The notetakers documented the contents of the discussions, which will

be analysed using ATLAS.ti software. The analysis procedure will follow the same method used for the semi-structured interview.

3.4.2 Survey

The survey, designed and distributed by Miloš N. Mladenović, aimed to gather expert opinions on the measurements and challenges related to promoting year-round active mobility. It included different types of questions, such as multiple-choice questions, Likert scale, single-choice closed-ended and open-ended question. The survey targeted experts from Denmark, Sweden, Finland, and Germany, focusing on the related fields. Data collection took place in January, receiving 50 responses in total. Specifically, there were 4 responses from 4 cities in Finland, 35 responses from 32 cities in Sweden, 8 responses from 6 cities in Denmark, and 3 responses from 1 city in Germany. Among these, 3 respondents were from Kalundborg, 1 from Lahti, 1 from Umeå, and 3 from Hamburg.

3.4.3 Expert interviews

Interviewee background

The list of the interviewees is shown in the *Table 2*. The interviewees have different backgrounds in related fields. Most interviewees are involved in the BATS project in case cities, except for Lahti who planned to drop out from the project. The interviewee was no longer responsible for the project but still provided valuable information for the thesis. The interview of this thesis included personal questions regarding the interviewees' personal opinions and experiences with active mobility to create a comfortable and trustworthy atmosphere so that deeper information can be found out (Scherer, 2023).

Table 2 Interviewee list

Reference code	Position	Organization	City + country
H1	Project manager	City of Lahti	Lahti, Finland
H2	Senior Project Manager - climate and energy coordinator	Kalundborg Municipality	Kalundborg, Denmark
H3	Landscape architect		
H4	Research assistant	Free and Hanseatic City of Hamburg - Altona District Office	Hamburg-Altona, Germany
H5	Traffic planner		Umeå, Sweden

H6	Traffic planner	Umeå Municipality

Interview process

The interviewees were initially contacted via email to inform them about the master's thesis topic and to coordinate their availability for an interview. Interviews with planners from Umeå, Kalundborg, and Hamburg-Altona were conducted through Microsoft Teams, with two interviewees from both Kalundborg and Umeå participating simultaneously due to time constraints. The interview with the planner from Lahti was conducted face-to-face. The duration of each interview varied between 50 to 75 minutes, depending on the interviewees' availability, level of engagement, and topics discussed.

For the online interviews, audio transcripts were automatically generated by Microsoft Teams, while the face-to-face interview in Lahti was recorded and transcribed using Turboscribe (free version). Umeå interviewees received the interview protocol before the interview to provide them with an overview of the content due to their tight schedule, whereas the other planners were informed of the interview themes via email. The first interview with the Hamburg-Altona planner was led by Milos, and the rest of interviews were conducted by the author.

In the beginning, the interviewer introduced the master's thesis purpose. Interviewees were asked for their consent to record the conversation before proceeding. Although the interviews generally followed the pre-established protocol, they were not strictly bound to its order, allowing for a smoother, more natural flow of conversation. Initially, the interviewees were asked to introduce themselves and share details about their background, which gave them the opportunity to frame their experience in their own terms and created a more open and comfortable atmosphere. The interviewer then followed up with questions based on the most prominent themes mentioned by the participants.

Analysis of interview results

The five transcripts were analysed using a qualitative content analysis method developed by Schreier (Schreier, 2012). These transcripts were coded using the software ATLAS.ti. The software helped to generate a code book by identifying data segments that can be represented by words or short phrases (*The Ultimate Guides to Qualitative Research*, n.d.). The coding process employed both inductive and deductive approach. Inductive coding seeks to generate insights directly from the qualitative data, on the other hand,

deductive coding applies an existing theoretical framework or prior research to the data, using a predefined set of codes grounded in established scholarship (Coding Qualitative Data | Overview, Methods, Software, n.d.; What Is Content Analysis?, n.d.). Utilizing both inductive and deductive coding methods facilitates a more comprehensive analysis of the data, extending established knowledge and simultaneously generate new insights into less familiar aspects of the data (Coding Qualitative Data | Overview, Methods, Software, n.d.; What Is Content Analysis?, n.d.).

4 Results

4.1 Kalundborg

4.1.1 Socio-demographics and mobility system

Kalundborg is Denmark's 43rd largest municipality, with a population of 16.500. Its demographic composition is shaped by its role as an industrial hub. While the overall population of Kalundborg is expected to remain stable, rural areas and smaller towns are projected to experience a decline, with growth concentrated in Kalundborg city. Historically, a significant portion of the population has had lower levels of education. However, the presence of large, specialized companies, advancements in innovation and complex production processes, and the establishment of new academic institutions are expected to significantly increase the proportion of residents with medium to long higher education degrees. Some companies with sustainability goals are also encouraging employees to adopt active mobility for commuting. Additionally, the construction of a major medical company is anticipated to create new job opportunities and attract younger generations, many of whom favour sustainable transportation, to Kalundborg.

According to the survey (Høj et al., 2022), the traffic pattern in Kalundborg municipality is predominantly car-dependent, with most of the car traffic being either local or originating from surrounding areas. Overall, car trips account for 76% of all journeys, while public transport (bus and train) represents 4%, which mainly used for educational purposes. Active mobility accounts for 20%. For short trips of 0-2 km, cars are used for 39% of trips, while for distance over 2 km, cars dominate 77-94% of trips. In terms of age groups, driving is the most common mode of transport in nearly every age group from 18 years old onwards, especially in the 25-65 age range, where over 60% of trips are made by driving.

4.1.2 Climate and geographic factor

Climate

As per the Köppen-Geiger classification, the weather conditions in Kalundborg are categorized under Cfb. As shown in the *Table 3*, the climate is generally warm in Kalundborg. The mean yearly temperature amounts to 9.4 °C in Kalundborg, even in coldest month, in January and February, the temperature is above 0 °C (*Kalundborg Climate: Weather Kalundborg & Temperature by Month*, n.d.). This suggests that snow is not a big issue in Kalundborg. However, Kalundborg is a city with significant rainfall. Rainfall is

evenly distributed throughout the whole year. Precipitation here is about 771 mm per year. Heavy rainfall poses a significant challenge for pedestrians and cyclists in Kalundborg. Additionally, wind is also another factor that negatively affects AM in Kalundborg, according to the weather data (*Kalundborg Climate, Weather By Month, Average Temperature (Denmark) - Weather Spark*, n.d.). The windier period of the year in Kalundborg lasts for 6.2 months, from September 17 to March 23, with average wind speed exceeding 14.1 miles per hour. The calmer period still experiences average hourly wind speed of 11.8 miles per hour, which can be challenging for both pedestrians and cyclists.

Table 3 Kalundborg climate

Date: 1991 – 2021

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Temperature (°C)	2	1.7	3.4	7.5	11.9	15.3	17.8	17.6	14.8	10.6	6.8	3.7
Min. Temperature (°C)	0.6	0.3	1.5	4.9	9.1	12.6	15.2	15.4	12.9	9.2	5.6	2.5
Max. Temperature (°C)	3.2	3.2	5.5	10	14.5	17.7	20.2	19.8	16.8	12.1	8	4.9
Precipitation (mm)	64	50	49	40	54	69	66	77	76	82	75	69
Humidity (%)	84	83	80	76	74	73	75	76	78	81	84	84
Rainy days (d)	10	8	8	7	8	8	8	9	9	11	11	10
Avg, Sun hours (hours)	2.6	3.7	5.7	9.1	10.7	11.4	11.5	10.4	7.9	5.2	3.2	2.6

Source: (*Kalundborg Climate: Weather Kalundborg & Temperature by Month*, n.d.)

Geography

Kalundborg has the size of 604,4 km^2. It is situated at the bottom of Kalundborg Fjord, which opens into the Kattegat Sea. As shown in *Figure 4*, the city centre and resident areas are situated on flat land towards the fjord but extend uphill into the hilly landscape to the north.

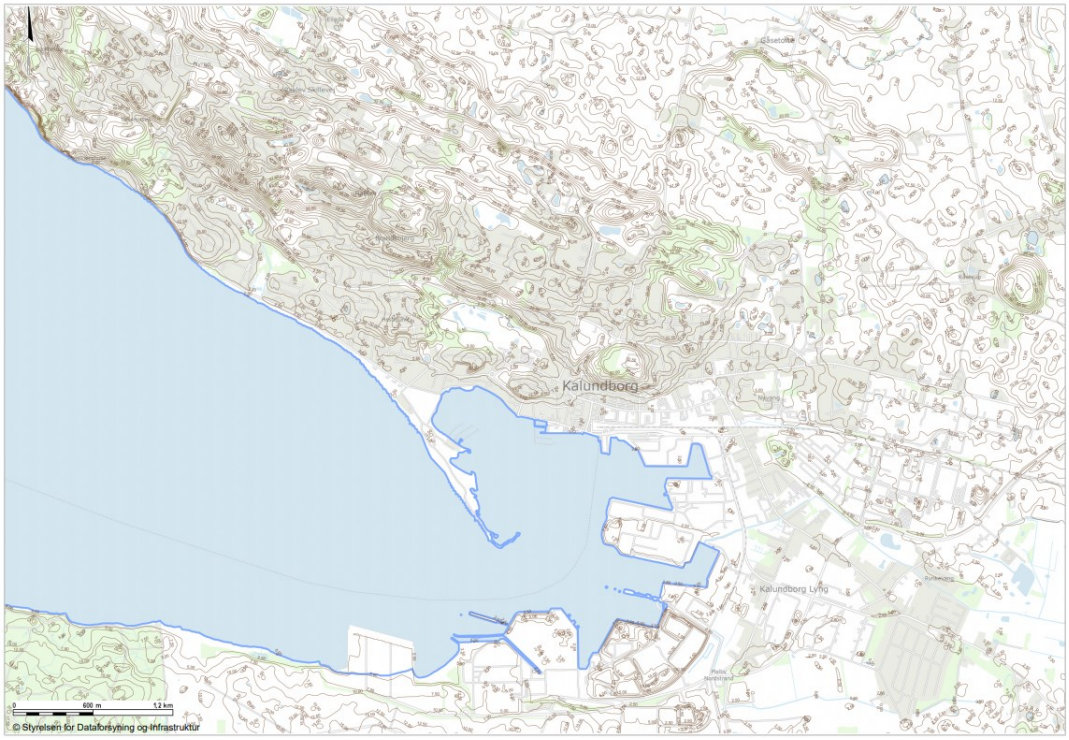

Figure 4 Kalundborg geography
(source: from internal document)

4.1.3 Political factor

The attitudes of politicians are relatively supportive in Kalundborg. Interviewees mentioned that AM planning is still quite new to both politicians and planners. They tried to include politicians in every step of the planning process so that they will understand planners' work and be more supportive when they have requirements such as asking for funding or personnels. They maintained a proactive attitudes towards AM planning, however, they still feel the support is insufficient and need more resources from the politicians.

"..., our politicians, which needs to know what we are doing so that that when we do the interviews and the relation building that I know what we're doing and they support it so that they are not later on then and yeah, do not support."

4.1.4 Organizational factors

Department collaboration

Kalundborg interviewees noted that the BATS project provided an opportunity to engage in AM projects and collaborate with other departments. However, there were no formal regulations outlining specific responsibilities

related AM planning. While they would prefer to have those rules clearly defined, addressing these issues have been challenging due to limited resources and time.

Land jurisdiction

The interviewees highlighted the challenges of implementing new AM infrastructure due to land jurisdiction issues. Planning bike lanes on older roads often necessitates appropriating parts of adjacent properties, which can provoke substantial resistance from property owners. The owner can be private, municipality, or state owner. This resistance leads to significant political challenges and controversy. Expropriation is one measurement frequently used to get the ownership of the land.

Public campaign

The interviewees emphasized the importance of transforming the mindset of citizens. Implementing public campaigns, educational programs, and community events can help familiarize people with AM activities, alleviate their hesitations, and enhance their understanding of AM's benefits. Additionally, the interviewees underscored the importance of fulfilling promises made to citizens and ensuring they are informed about upcoming changes.

"..., so, it's important that we do not promise them that we can change everything, but still that we can make changes that they can experience. They know and they have participated in making this better."

4.1.5 Resource factor

Kalundborg interviewee repeatedly highlighted the importance of resource in AM planning, especially funding. While politicians have allocated certain amount of funding to AM, the budget remains insufficient, especially when it comes to planning projects in the old town. They still expressed feeling restricted by these financial constraints.

"Projects like you say city development, but in the old town and it's more difficult to get money..."
"How can we get a fundings to make more than just that, uh little fun thing in the BATS project."

The interviewees also stressed that their motivation would increase if they were confident that the projects would lead to tangible outcomes or changes. Such results would not only boost their own enthusiasm but also enhance residents' trust in the authorities.

4.1.6 Stakeholder factor

Kalundborg Interviewees stated they tried to include as many stakeholders (e.g., NGOs, private corporations) as possible to help them in AM projects. They mentioned that they have been actively searching for the collaboration opportunities with external partners. For example, they partnered with a bicycle company to encourage citizens to cycle more by providing free trial. Additionally, an NGO collaborated with Kalundborg municipality to teach immigrants how to ride bikes. The interviewee acknowledged that these collaborations have been instrumental in achieving their goals.

4.2 Umeå

4.2.1 Socio-demographics and mobility system

Umeå has a population of 130.000, with the average age being 38 years old. It has 2 universities with 36,700 students. *Figure 5* highlights notable differences in modal split based on gender and the distinction between urban and rural residency.
reveals significant differences of modal split based on gender and urban vs. rural residency. According to the Overall, 38% of trips are made by car, 5% by bus, 22% by bicycle, 33% on foot, and 2% by other means. Women tend to use cars less (32%) compared to men (44%) and favour walking (35%) and cycling (24%). In urban areas, car usage drops to 34%, with a higher emphasis on walking (33%) and cycling (25%). Conversely, rural areas see a dominant car usage at 61%, with lower rates of cycling (4%) and walking (28%).

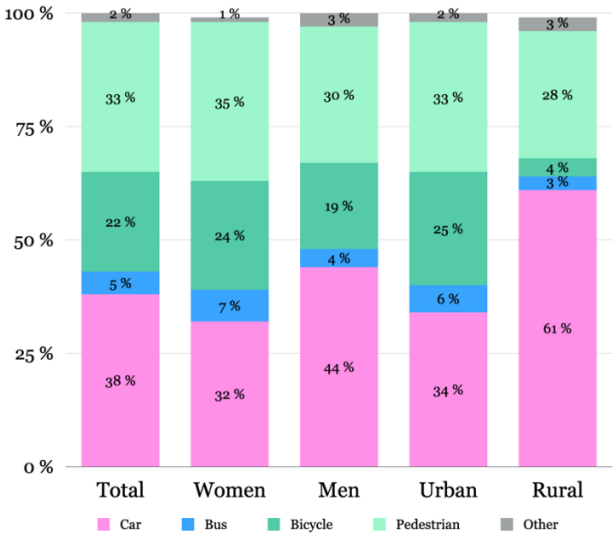

Figure 5 Modal split in Umeå

4.2.2 Climate and geographic factor

Climate

As per the Köppen-Geiger classification, the prevailing weather conditions in this region are categorized under Dfb. The climatic conditions in Umeå are mostly characterized as frigid and moderate. According to the data shown in *Table 4* (*Umeå Climate, Weather By Month, Average Temperature (Sweden) - Weather Spark*, n.d.; *Umeå Climate: Weather Umeå & Temperature by Month*, n.d.), the cold season lasts for 4 months, from November to March, with an average daily high temperature below 0 c. The coldest month of the year in Umeå is January, with an average low of -12 and high of -4.

There is significant rainfall throughout the year in Umeå. Even the driest month still has a lot of rainfall. The rainy period of the year lasts for 9.6 months, from March to January. The precipitation level on a yearly basis amount to 735 mm as per the meteorological records. Umeå also experiences long snow periods, which can last up for 7 months, from October to April. The month with the most snow in Umeå is January, with an average snowfall of 22.86 cm.

The length of the day in Umeå varies extremely over the course of the year. In 2024, the shortest day is December 21, with 4 hours, 18 minutes of daylight; the longest day is June 20, with 20 hours, 53 minutes of daylight.

Table 4 Umeå climate

Date: 1991 – 2021

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Temperature (°C)	-5.4	-5.7	-2.9	2.1	7.9	12.6	16.4	15.2	10.9	4.7	0.6	-2.8
Min. Temperature (°C)	-7.8	-8.1	-5.6	-1	5.5	9.3	13.3	12.5	8.5	2.8	-1.1	-5
Max. Temperature (°C)	-3.3	-3.6	-0.3	5	10.8	15.4	19	17.7	13.3	6.5	2.1	-0.8
Precipitation (mm)	58	44	41	39	46	63	79	81	66	76	74	68
Humidity (%)	86	85	82	76	68	68	73	77	79	84	86	84
Rainy days (d)	9	7	7	6	7	7	9	9	8	9	10	10

Source: (*Umeå Climate: Weather Umeå & Temperature by Month*, n.d.)

Geography

Umeå has the area of 34,15 km² located in the northern Sweden. Its terrain is relatively flat, with a few rolling hills, and it sits at an elevation of about 15 meters above sea level. Surrounding the urban core are extensive forests and green areas, characteristic of the northern Swedish landscape. These areas include the Nydalasjön recreational area and the expansive Gammlia park.

4.2.3 Political factor

Under normal conditions, planners have power to decide how projects go without asking for politicians' permission. The general politicians' attitudes towards sustainable travel and mobility management in Umeå were quite positive mentioned by Umeå interviewees. They acknowledged the huge influence of political support can bring to the AM planning and for they having this support making their work easier. Presenting the work to the politicians was also pointed out by the interviewees so that they can understand the importance of their work. This is also to get politicians on board, making it easier to get funding. Elections usually did not cause huge effects on AM, though sometimes AM might be postponed or prolonged avoiding sensitivity.

4.2.4 Organizational factors

Departmental collaboration

According to the Umeå interviewees, responsibilities were clearly delineated among various departments, which led to reduced collaboration and communication among different departments. However, the interviewees expressed a willingness to increase collaboration in the future if given more opportunities.

"..., but we wanted to make it more and more collaboration between the departments."

The BATS project has generated opportunities both in terms of job creation and fostering collaboration. An interviewee working on the cycling project mentioned that she was hired due to the BATS project. She worked as coordinator between different departments to promote active mobility. Additionally, the project facilitated increased communication and collaboration among team members.

4.2.5 Resource factor

Resource constraints limited the efficiency of municipal planners. They expressed the need for additional resources to have more freedom to realize their goals. Money has always been a biggest constraint, bringing up constantly by the planners, which causes a chain of effect. Resource limitations also led to a shortage of personnel. Planners are required to complete their work with fewer staff and within fixed timeframes, making them feel perpetually behind schedule. In some cases, planners had a hard time to initiate and follow through the pilots and projects due to time limitation. They also lacked necessary tools, such as evaluation process and skills, to facilitate the follow up of the project. One of Umeå interviewee considered these toolkits exist, but they do not have time to use, which also the problem of lacking personnel.

"(The) biggest challenge is the time you want to do so much, and we got we get questions from other departments, other companies and so on."

4.2.6 Stakeholder factor

The municipality collaborates with NGOs, and these NGOs have certain power to influence AM projects. However, this collaboration is not effective. Umeå municipality also reaches out to schools and corporations to establish public campaigns or educational programs.

4.3 Lahti

4.3.1 Socio-demographics and mobility system

Lahti is a city of 120,000 inhabitants in Southern Finland. The road network was designed to accommodate cars. The city has an ambitious aim to reach carbon neutral and reduce the car mode share by 17% by 2030. Lahti has been proactive on the promotion of active mobility through initiatives such as the CitiCAP project (Citizens' cap and trade co-created), which ran from 2018 to 2021 (CitiCAP, n.d.). The CitiCAP project involved piloting a personal carbon trading scheme for mobility, developing the first Sustainable Urban Mobility Plan (SUMP), creating a transport data platform, and constructing a bicycle highway adhering to modern design standards (CitiCAP, n.d.).

As of January 2020, Lahti has an extensive road network covering 665 kilometres, along with 543 kilometres of dedicated bicycle paths, 166 kilometres of which are designated for non-motorized traffic (see *Figure 6*). In April 2023, the city also launched a bike-sharing program with 500 bikes distributed across 62 locations (City of Lahti, 2023).

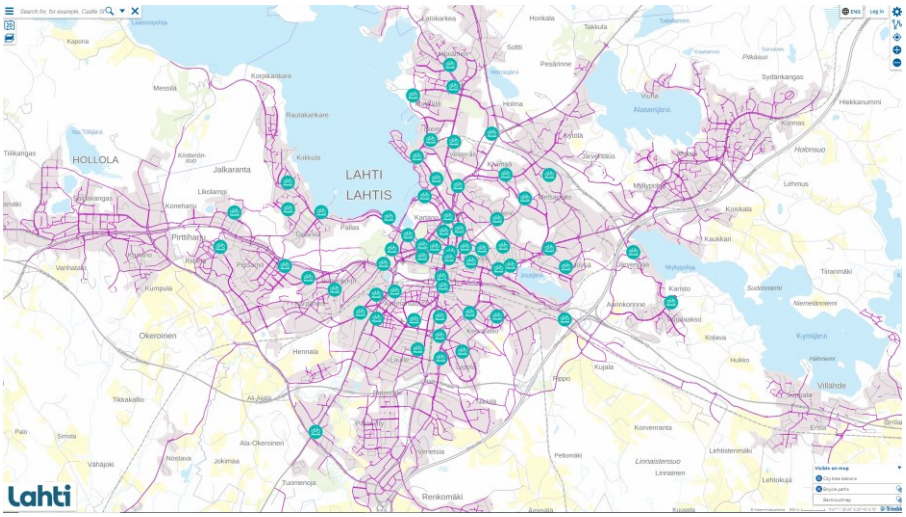

Figure 6 Lahti cycling path and city bike stations
Source: (*Lahti Map Service*, n.d.)

In Lahti, the modal split of transportation reflects a city balancing between sustainable mobility and traditional commuting patterns (Alimohamadi, 2024). According to the *Figure 7* (Väkeväinen, 2023), over half of all journeys (51%) are made by drivers of passenger cars. Sustainable transport mode maintains small portion: walking constitutes 23% of the modal split, cycling and bus consisting of 6% and 3% respectively.

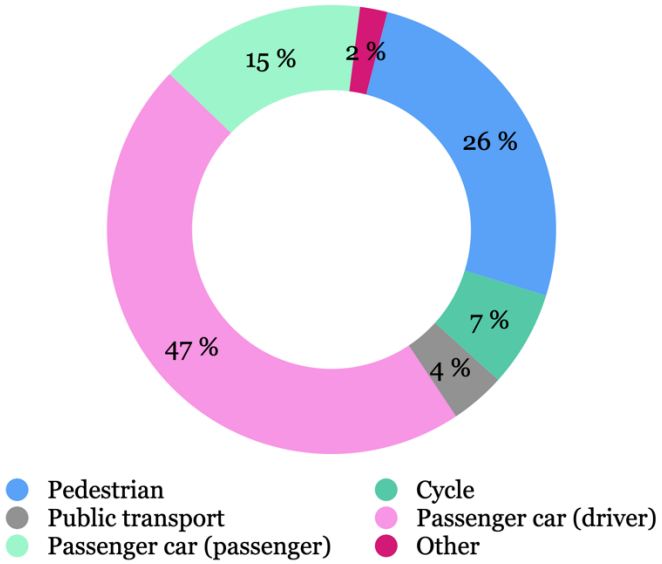

Figure 7 Modal split in Lahti in 2023
Source: (Väkeväinen, 2023)

4.3.2 Climate and geographic factor

Climate

Köppen and Geiger classify Lahti's climate as Dfb. Characterized by mild and partly cloudy summers and long, cold, snowy winters (Lahti Climate, Weather By Month, Average Temperature (Finland) - Weather Spark, n.d.; Lahti Climate: Weather Lahti & Temperature by Month, n.d.). According to the *Table 5*, the mean annual temperature is 5.2 °C. Throughout the year, temperature typically range from -11 °C to 22 °C, rarely dropping below -24 °C or exceeding 28 °c. The warm season lasts for 3 months, from May to August, with an average daily high temperature above 16.7 °C. Conversely, the cold season spans 4 months, from November to March, with an average daily high temperature below 0 °C.

Lahti experiences significant rainfall throughout the year. The total annual rainfall amounts to 691 mm. According to *Table 5*, July is the wettest month, with an average of 82 mm of precipitation. The snowy season lasts for six months, from October to April, during which there is a sliding 31-day snowfall of at least 2.54 cm. January is the snowiest month, with an average snowfall of 18.8 cm.

The length of daylight in Lahti fluctuates significantly throughout the year. In 2024, the shortest day will occur on December 21, providing just 5 hours and 32 minutes of daylight, while the longest day will be on June 20, with 19 hours and 16 minutes of daylight (*Lahti Climate, Weather By Month, Average Temperature (Finland) - Weather Spark*, n.d.).

Table 5 Lahti climate

Date: 1991 – 2021

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Temperature (°C)	-6.3	-6.2	-2.8	3.7	10.6	14.7	18	16.3	11.4	5.1	0.8	-3
Min. Temperature (°C)	-8.6	-8.8	-6.2	-0.5	5.8	10.5	14.1	12.9	8.7	3.1	-0.8	-4.9
Max. Temperature (°C)	-4.3	-3.9	0.5	7.9	14.8	18.4	21.5	19.7	14.4	7.1	2.2	-1.3
Precipitation (mm)	52	42	39	39	53	79	82	73	57	62	57	56
Humidity (%)	88	87	82	71	63	67	71	74	80	87	90	89
Rainy days (d)	9	8	7	7	8	9	10	9	8	9	8	10

Source: (*Lahti Climate: Weather Lahti & Temperature by Month*, n.d.)

Geography

Lahti has the area of 517,63 km². As shown in *Figure 8*, Lahti's city centre is relatively flat, situated on the lower elevations near Lake Vesijärvi. The suburbs and outskirts, however, are more varied in elevation, particularly where they intersect with the Salpausselkä ridges. Lahti is known for its extensive green spaces. The terrain allows for diverse parks and recreational areas, such as the extensive Fellman Park, which integrates natural features like small hills and water bodies.

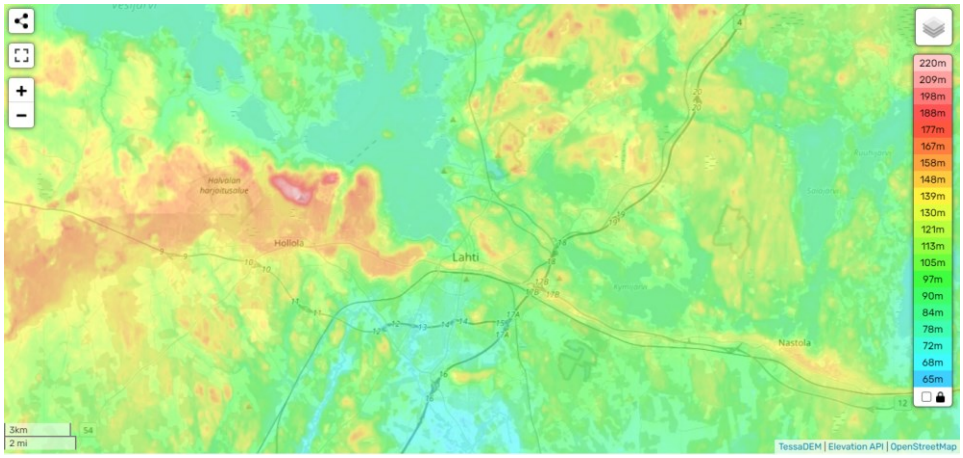

Figure 8 Topographic map of Lahti
Source: (*Lahti Topographic Map, Elevation, Terrain*, n.d.)l

4.3.3 Political factor

At the time when I conducted the interview, Lahti was planning to drop out from the BATS project. And the interviewee who works on the project will be assigned to another Finnish city who has the interest to promote active mobility. The interviewee was worked as a project manager in BATS project, coordinating among different departments to

Political support is highly crucial to AM projects as they decide who get the funding (e.g., TFK, Business Finland). Lahti interviewee acknowledged that despite some political resistance to the green agenda, there's a consensus that active mobility (walking and cycling) is indispensable. The issue arises with conservative viewpoints equating wide roads and car infrastructure with sufficient provisions for active mobility. These critics fail to recognize the complexities and difficulties of using walking and cycling infrastructure designed primarily to accommodate car systems. Thus, the prioritization of active mobility remains a contentious issue between critical politicians and urban planners.

This can be due to a gap in politicians' mindset regarding AM planning. Politicians hold the thoughts that AM does not need continuous input and is less primary compared to motorized mobility, which in their views, can bring economic boost. In addition, they do not equip enough knowledge about AM, making AM projects vulnerable compared to other planning projects such as public transportation or highway construction. Especially during the period that economy does not strive, planners are especially careful with the proposal they want to hand to the politicians because they may just shut down them.

"For example, winter cycling, I think they just think that there's no such thing as winter cycling. I think the planning organization has kind of grown a bit wary of those politicians that they think when it's kind of wise to put forward some plans because if they put those into their politicians in bad, kind of bad timing, then it's just kind of rejected and kind of distorted, and it just doesn't happen."

Election affects the continuity of AM planning in Lahti. Mentioned by the planners, there was a setback in the AM planning in 2021. Politicians in Lahti believed they have done enough for the AM. They are currently more concerned about making contribution to the economic development.

"Many politicians in Lahti feel that they have already done enough, especially there is the financial constraints, they need to cut spending quite heavily right now because of many governmental decisions. They are not against sustainable development, they are not against active mobility, but they think that they have done enough."

Mentioned by Lahti interviewee, the conservative and liberal parties have almost equal power which create debates about the AM planning. In general, Lahti's politicians acted more conservative and car-oriented compared to major cities.

"In Lahti, I think it's a bit of a 50-50. There's kind of half of the politicians are kind of at least to some degree is favouring sustainable sustainability issues, active mobility, and public transportation. And the other half is kind of much more conservative, thinking that, okay, we don't need to fund that much. Basic level is we need to concentrate savings and more commercial development., ..., so, Lahti politicians are much more conservative and car centric in general, but it's a heated debate there also in the city council."

4.3.4 Organizational factors

In-house engineers' attitudes/knowledge

Lahti interviewee highlighted the role of municipal planners is not just technical but also heavily influenced by social and psychological factors. Planners must navigate the semi-external pressures from politicians, requiring a blend of technical, social, and psychological skills to effectively develop and implement urban plans. One example mentioned by the interviewee was that planners come up with a creative approach to overcoming financial limitations which is to use commercial development budget rather than the transportation budget to implement the AM project.

"Interesting yeah, it's kind of working as a municipal planner it seems to me that politicians are a kind of a semi external factor that you need to take into account. So, when you are developing skills as a planner it's not only kind of technical but it's very much kind of social and psychological, that's true."

The interviewee also highlighted the function of younger generation planners, who have more enthusiasm and commitment to develop active mobility compared to older generation, who are more support motorized mobility. Older generation planners are more view active mobility as a part of general plan, which can just be designed and planed along with the transportation planning and not require extra input.

"I think it is a bit of a generational issue, also kind of within the planners that the younger ones are more kind of seeing that you need to prioritize active mobility; you need to prioritize public transportation. Maybe the older ones are asking why you need to prioritize (AM). We just kind of include everything and everybody's about the commercial development."

Planning process & procedure factor

Lahti, awarded the European Green Capital in 2021, has implemented several pro-environmental initiatives, including a goal of achieving carbon neutrality by 2025. However, being a developing city with economic stress has been identified as a significant obstacle to sustainable development, as noted in interviews. It is impractical to simultaneously start all projects at once while waiting for better conditions, therefore, driven by political pressure, commercial and residential development have been prioritized. The pressure is common mentioned by the interviewee among Finnish cities, pushing for the advancement of urban development plans.

“This bus project being cancelled by those politicians, it kind of made my supervisor think that there is kind of the cycling, I think it's the cycling network plan of the city centre area that they are developing, but they are not introducing that for a while. They just need to wait a bit, and then for a bit better timing, they just put it forward, hope that kind of, yeah.”

“There's, I think, constant pressure for all the kind of bigger and growing cities in Finland that you need to just put forward the plans, move forward the plans as much as you can.”

To tackle these issues, planners have come up with corresponding strategies. One strategy mentioned by the planners is that they hold the AM project until the right moment to bring it up. The other plan is to mention AM as a part of other development plans such as highway plan. One example brought up is relocation of a chocolate and sweets factory from Vantaa, which could significantly boost local employment and tax revenue. This project illustrates the intersection of commercial development and AM planning. The factory’s relocation hinges on the city’s ability to provide adequate transportation infrastructure, including direct bus connection, improved cycle lanes and a city bike station. This need for infrastructure highlights the broader trend where commercial interests increasingly recognize the value of active mobility for attracting and retaining a workforce, particularly younger employees who may not own cars.

The interviewee functioned as a liaison, facilitating communication between different partners and handling program-related tasks. This role involved not only managing the project process with various partners but also connecting city-level actors to collaborate effectively. However, city planners and officials viewed it as bureaucratic process, which is overwhelming and time-consuming, which discourage their participation.

“This is, and so, that changed my role quite a much. But kind of before that, when I was kind of starting the bus project work, I saw myself as a bit of a cog in the wheel. We come further with the piloting activities, which are the main responsibility for the city partners, in parts, I had needed to talk more with the maintenance section and to kind of discuss where what are their priorities, …, So, also after the cancellation, when I contacted different cities, they kind of had the same everywhere, that though we don't have time for this, it's something that kind of doesn't, are they take so much time. So, my task would be kind of to be the EU guy, in that sense, that I kind of communicate with different partners and do the kind of the communication needed for the program and all those program-related tasks.”

The interviewee highlighted the dilemma of difficulties to maintain the continuity of AM planning throughout the development process. Because development typically requires to be conducted incrementally. The cost of implementing the entire system at once is too high. Even with a comprehensive plan, there usually is not a single project that encompasses the entire scope needed to build a large sector.

4.3.5 Resource factor

A significant challenge is funding, particularly for road improvements and active mobility infrastructure. Lahti lacks the funds to transform an old national road (now a ring road) into a more pleasant and safer route for cyclists and pedestrians.

"But the old road, I think it's still owned by government and it's quite wide, which means that people drive there very fast. It's just through the city centre next to the railway station. So, it's a bit a bit of a problem and Lahti just don't have the funds to kind of rebuild that as a more kind of pleasant road so that that will exist there for many years."

The allocation of funds is influenced heavily by politicians, who control the budget. In recent years, the issue has become politicized, with younger, vocal politicians favouring active mobility and public transportation. This has led to a counter-reaction from older, more conservative politicians who are resistant to these projects, often seeing them as aligned with their political opponents. Politicians are more inclined to invest in motorized mobility, despite the significant funding required, due to the potential economic benefits.

"It's very expensive you build huge intersections, and you build bigger infrastructure. It costs a lot. People still think that okay, we need to do this, it costs a lot, but we just need to do this and then, they kind of they have to spend millions of euros for car infrastructure they cover plan. Cycling track or a new bus line maybe costs two hundred thousand euros. Okay, we are not paying that."

"So, the problem is that the funds are basically sitting behind the politicians. They got the money and kind of not only that, but I think in recent years that it has politicized a lot. With kind of younger people coming in, it's kind of also younger politicians that are very much favouring active mobility and public transportation. They are very vocal of that. There's a kind of counter effect that those older more conservative, they are kind of turning more kind of against those because it's kind of favouring those by their political opponents. I think it's a global discussion."

Lacking personnel also increase the burden and workload of planners. They felt constrained by time and workloads. The interviewee highlighted the potential benefit of hiring dedicated individuals to address specific issues related to AM. For instance, the city of Lahti has one person focused on specific issues which proven to be effective.

4.3.6 Stakeholder factor

Lahti interviewee mentioned that it is mandated in the law that local stakeholders should be informed about the planning scheme. In Lahti, there also have dedicated personnel to collect citizens' opinions. The interviewee viewed it as an effective way to test and pilot the new projects to assess citizen activation and engage with them.

To organize and motivate citizens to participate these events can be tricky as they may not be available due to personal situations, such as time, location, and simply disinterest.

Lahti had dedicated person responsible for reading citizens comments regrading AM planning. Though the interviewee noted that comments online were not always positive or neutral. People tended to express their anger quite straightforward without considering reviewers may feel bad when they read these comments. The interviewee also added that even though sometimes the comments can be very rude and uncomfortable, still some comments are practical and useful to the planners. Some comments are about very small aspects such as speed limits, road conditions, however, it is because of these details that make AM planning feel more comfortable and accessible to everyone.

In addition, residents also played an important role in influencing active mobility during the wintertime. Lahti has rich winter sports culture. Some streets are used for skiing paths. This caused the conflicted between ski lovers and pedestrians and cyclists.

4.4 Hamburg-Altona

4.4.1 Socio-demographics and mobility system

Hamburg-Altona has an area of 77,4 km2 with 280.034 inhabitants. The demographic composition is that 16% of inhabitants are between 18-29 years old and 52% of inhabitants are between 30-66 years old.

As illustrated in *Figure 9*, Hamburg's mobility system has experienced a gradual but consistent shift towards sustainable transportation between

2008, 2017, and 2022 (Behörde für Verkehr und Mobilitätswende, 2023). The percentage of car trips has decreased slightly, from 39% in 2008 to 32 in 2022. In contrast, cycling trips have increased from 13% to 22% during the same period, constituting nearly 1/5 of the overall modal share. However, walking trips have declined from 29% in 2008 to 22% in 2022. the *Figure 10* (Follmer et al., 2020) showed that in Altona, cars accounted for 31% of trips, while walking and cycling made up 22% and 28%, respectively, showing that Altona had a higher proportion of residents engaging in active mobility compared to Hamburg in 2017. Overtime, Hamburg-Altona has actively promoted active mobility through various projects (see *Table 6 6*), such as the car-reduced "Mitte Altona" district, a cycle highway integrated with the A7, a bicycle library for regional cycling.

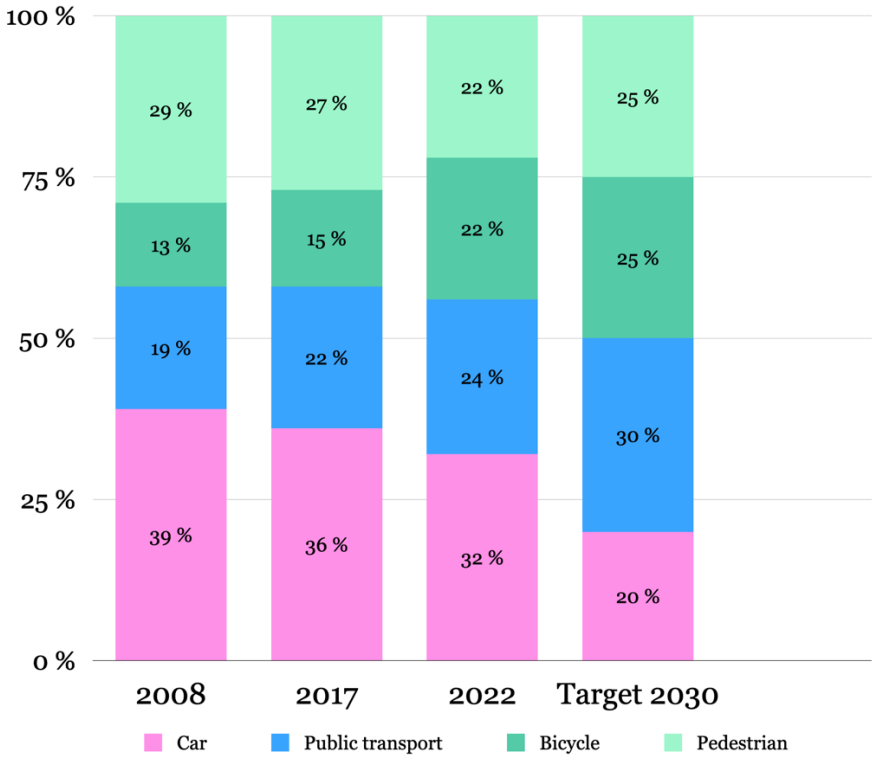

Figure 9 Development of the modal split in Hamburg
Source: (Behörde für Verkehr und Mobilitätswende, 2023)

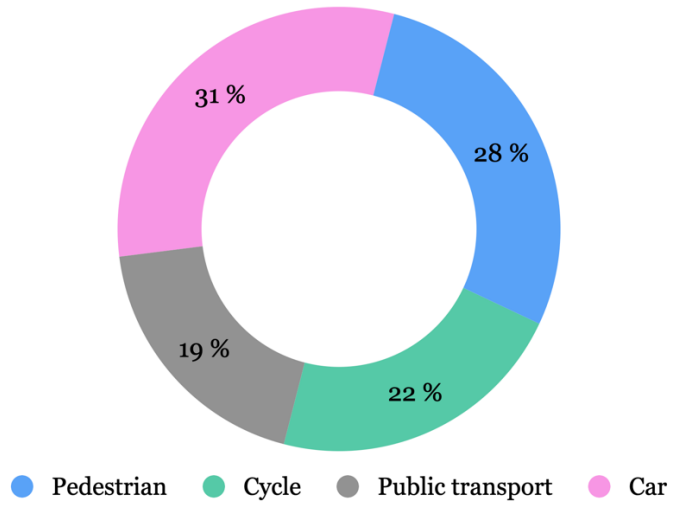

Figure 10 Modal split in Hamburg-Altona in 2017
Source: (Follmer et al., 2020)

Table 6 6 Active mobility related projects in Hamburg-Altona

	Projects
1	New Urban District "Mitte Altona" – car reduced neighbourhood
2	Enclosure of the highway A7 integrating a cycle highway on green lid
3	FABIRA Fahrradbibliothek zur Förderung des regionalen Radverkehrs am Beispiel von Hamburg-Altona Bicycle library to promote regional cycling using the example of Hamburg-Altona
4	Pedestrian traffic strategy
6	Alliance for cycling

4.4.2 Climate and geographic factor

Climate

The Köppen-Geiger climate classification categorizes Hamburg's climate as Cfb, indicating a mild, temperate environment. Summers are generally comfortable and partly cloudy, while winters are long, cold, windy, and predominantly overcast. According to *Table 7*, the yearly temperature typically ranges from -1.1°C to 22.8°C, with extremes rarely falling below -8.9°C or exceeding 28.9°C. July is the warmest month, averaging 18.5°C, while January experiences a significant drop, with an average low of 1.7°C.

According to *Table 7*, Hamburg experiences significant precipitation year-round, with an annual average of 804 mm of rainfall. Even during the driest month, February, there is a notable amount of rainfall, averaging 54 mm. The

wettest month is July, with an average of 90 mm of rain. In addition to rainfall, Hamburg has a snowy period from December 9 to February 16, during which there is a sliding 31-day snowfall of at least 2.54 cm. January sees the highest snowfall, with an average of 3.81 cm.

Table 7 Hamburg climate

Date: 1991 – 2021

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Temperature (°C)	1.7	2	4.5	9.1	13.3	16.3	18.5	18.1	14.9	10.5	6	3
Min. Temperature (°C)	-0.4	-0.5	0.8	4.4	8.5	11.8	14.1	14	11.3	7.6	3.8	1
Max. Temperature (°C)	3.7	4.8	8.2	13.6	17.7	20.4	22.6	22.1	18.7	13.5	8.1	4.8
Precipitation (mm)	68	54	59	54	69	77	90	82	64	60	59	68
Humidity (%)	85	82	79	71	69	69	71	73	76	82	87	86
Rainy days (d)	10	8	9	8	9	9	10	10	8	9	9	9
Avg, Sun hours (hours)	2.4	3.5	4.9	7.9	9.4	9.7	9.9	9.2	6.8	4.8	3.1	2.3

(Hamburg Climate, Weather by Month, Average Temperature (Hamburg, Germany) - Weather Spark, n.d.; Hamburg Climate: Weather Hamburg & Temperature by Month, n.d.)

Geography

Hamburg-Altona has the area of 77,4 km². The area's density is reflected in its residential patterns, infrastructure, and land use. Despite its urban density, Altona is home to several significant parks and green spaces, such as Altonaer Volkspark and Wohlers Park, providing recreational areas for residents and visitors. The elevation in Altona varies, with areas close to the river being relatively flat, while parts further inland rise gently.

4.4.3 Political factor

Within the department, there is broad support for AM plans, with higher-level supervisors advocating for the transition from cars to active mobility. However, Hamburg-Altona interviewee noted that challenges also arise from other departments. For instance, the police department has occasionally opposed AM planning, arguing that it might lead to increased unsafe conditions at night. Such opposition can hinder implementation of AM projects.

"And then it comes to hierarchy, ..., for example, sometimes the ministry of inner affairs, if it comes to regulations, sometimes they say no."

"Also, sometimes arguments are from the police. For example, this look like it is going to be a dark place for criminals. It is dangerous, something like that."

"Because then one party argues no, we cannot deliver this or that we plan like two years later."

Although these prevailing trends support active mobility (AM) planning, Hamburg remains a car-oriented city with a long history of automobility. Resistance to AM initiatives may stem from higher-level authorities who favour traditional automobility practices.

"And then it comes to hierarchy. ..., You know, really hierarchy and then it's no discussion, bye."

4.4.4 Organizational factors

organization attitudes

Hamburg-Altona interviewee emphasized the proactive nature of their work, which involves significant public participation and visibility. Their approach includes engaging with citizens directly and using field research to ensure the practicality of AM planning schemes.

"I would say we are very visible, and we have regular meetings, for example, ..., they have one of these civil society houses, and you can just meet and drink a coffee, ..., and usually we also have regular meetings in these citizen houses to explain what our plans are for the future for the neighbourhood, ..."

While new schemes inevitably face obstacles, the interviewee maintained a positive attitude regarding citizens' reactions. She believed that attitudes are gradually shifting as citizens are more frequently included in the process and kept informed in a timely manner.

"...with changes I mean, you know, the attitudes towards administration, ..."

"I would say that's change pretty during past 10 years. We really go out and we listen to our people and to our citizens and of course the attitudes towards public participation or so changed, which is a positive, I would say."

The shift in attitudes towards active mobility begins with changes in city administration. Efforts to include public participation in planning processes have gradually helped citizens understand the work of urban planners. In Germany, public participation has a long history, with its share of difficulties, but its importance has steadily grown. Moreover, social media has played a crucial role in compelling administrators to pay more attention to public opinion.

"It was clear that administration or cities have change attitudes towards citizens and behaviour and it was clear that we need to listen to our citizens and residents to get them on board. And I would say it really breaks through the border because we still suffer from the prejudice that someone is sitting there with pen and the stamp and doing nothing else."

Department collaboration

Among different districts, H4 mentioned they have collaboration with other districts to ensure their plans connect well among different borders of districts.

"I have the exchange with our neighbours, …, so these are our core neighbour districts, and we also check their plans with our plans so that there is a flow, …"

"We really talk to each other."

"When we have our plans ready, digital and everything. We sent our plans to all the other districts and the colleagues have for weeks to comments on those plans., …, then we look at all the comments and we say, 'that's a good hint'."

"This is why we appreciate that so many eyes are looking at our plans and then, in the end, it really helps."

"It really needs to get in the heads of the people, integrate additional departments, …, because it is not the standard issue."

AM planning need integrated collaboration among different departments as there are so many factors to consider. For instance, climate change should be one factor which should be taken into consideration in the planning process. Relevant subjects also should be with the help with other departments, e.g., darkness, gender issues, winter conditions, and maintenance. To assist with the collaboration, checklist for the administration can be efficient and effective to the coordination.

Planning process and procedure

Hamburg-Altona interviewee highlighted an issue with overly attractive visualization plans. She noted that urban planners often create visually appealing plans that may not align with the actual environment. For active mobility planning, H4 emphasized that plans should accurately reflect reality rather than focusing on impressive visualizations.

"We active mobility planners, we really insist not to present these mega shiny pictures because we think that will not be the truth, …, so we present more realistic pictures, drawings. We also point out where the specific problems are in terms of accidents or whatever in the street, if it comes to intersections, they are most crucial things for active mobility and safety."

To make AM plans more practical, H4 mentioned they conduct site investigation before making the plan. They also include data such as traffic flow, the number of accidents, and the number of shop owners.

Keeping projects straightforward for citizens is important for them to understand how projects work, so they can act less resistant when they think their rights are compromised. It is also crucial for politicians too. H4 mentioned that they used tools such as 3D models to explain their projects which may sound "weird" to citizens.

"It's sometimes hard to understand, especially for residents or politicians why we have to build streets or pavements in this or that way, …, no one understands if you come with this weird plan but as 3D models could explain what is going on with the canal or whatever it takes you much more and this is what we (do) if we do public participation. …, the difficulty we have is that of course they are not expert, they are not used to read these weird plans."

Hamburg-Altona planners have tried to ensure their planning process and procedure are understood smoothly. This is a win-win solution for both citizens and planners. For one thing, citizens are more involved in the planning process, and they can follow the whole procedure, for the other thing, it can ease the conflicts between projects and citizens.

"So, we think we need it for our public participation, for our residents, better solution to explain it and then this is our hope that they will understand why we sometimes plan in their eyes strange or not nice. It is not possible to plan everything in a nice way."

4.4.5 Resource factor

H4 highlight the importance of in-house engineers' knowledge and experience to the successful implementation of AM schemes. These engineers are crucial to push the project forward and the key factors to deal with not only designing issues but also issues such as stakeholders, strategic issues.

H4 also mentioned the importance of toolkits, such as expertise and training, to facilitate planners to better deal with all kinds of difficulty that active mobility currently faces.

"First of all, I think we need, especially if it comes to nighttime cycling or dark time cycling or active mobility. You need to have a kind of tool or whatever, which interrupts this silo thinking, because if it comes to darkness, you have to integrate so many more, ..., experts or topics like gender planning, all kind of safety issues. If it comes to dark and people say we just need more and bright lightning and then it is done."

In addition, urban structure also posed a challenge to engineers. Existing road network is designed for automobility, meaning that regaining space from them is difficult. Additionally, in suburban, housing density is low, people are more used to use car for their daily travel.

"But then, you have these single houses or semi-detached houses areas, and they are the owners. This is sometimes a mess because they are too late, or they do not do it."

4.4.6 Stakeholder factor

It has been a struggle between citizens and planners when establishing new AM schemes. It is still a problem to explain to the citizens that why the space is taken over. Citizens may be not on board with the plans if they do not understand them. Even minor changes can often trigger objections from citizens regarding their plans.

"We think we need for our public participation, for our residents, better solutions to explain it and then this is our hope they will understand why we sometimes plan in their eyes strange or not nice."

"It's sometimes hard to understand, especially for residents or politicians why we have to build streets or pavements in this or that way, ..., no one understands if you come with this weird plan..."

Since Hamburg has been historically car-oriented city, car-favourite citizens can be resisting on the mobility shift schemes. H4 stated that they not only inform citizen about what is going on, but also try to involve them into the process.

The reactions of citizens may differ depending on the size of the projects. Regarding the removal of parking space, planners will receive strong complaints from the car users.

"But if it is a hard case, so to say when you take a lot of cars or parking space away, then you will really need to sit together and think, …"

4.5 Comparison among case municipalities

4.5.1 Political factor

The effects of political factor bringing to AM planning varied due to different political landscape in each city. In general, politicians are in favour of AM according to the interviewees. However, the degree they support AM planning and the risk they are willing to take differ. In Lahti, the implementation of the project largely depends on the support of politicians. This is because Lahti's politicians hold the funding and have large power to determine whether a project can continue or not. In Hamburg, Umeå and Kalundborg, the attitudes of politicians are relatively positive and proactive, which also give planners more faith in it.

The mindset of politicians Is crucial for the smooth progression of projects. Politicians must adopt an equitable perspective to ensure projects are implemented effectively. Without this mindset, they may perceive AM planning as an obstacle to motorized mobility, which represents for economic development. According to Lahti interviewee, politicians felt the needs to grow the city by developing commercial, and residential areas. They secured the fundings to economic development. These actions also easier to gain voter support.

Moreover, politicians' understandings to the importance of AM were crucial for effective AM planning. If politicians perceive AM planning as merely a subset of general urban planning or transportation planning, requiring no specialized knowledge or dedicated personnel, the initiative may fall short of its objectives. Lahti interviewee mentioned that politicians viewed AM planning as latter or less critical or "playground issue".

"For those more conservative I think the problem is that they think it's equal when you have wide road and car infrastructure and there's some parallel

connection. It's just equal that you can either drive car or walk or cycle. But they cannot understand that how much more difficult it is to use the walking and cycling infrastructure which is kind of mandated by the needs of the car system. ..., the prioritization of active mobility is the dilemma between those critical politicians and the planning person." (Lahti interviewee)

Election cycle did not have the same effects to AM planning in targeted cities. Though interviewees all agreed that they tended to slow the process or even suspend the projects during the election time. It has also been recognized that younger politicians are more in favour of AM compared to older generation. They might be the figurehead to confront conservative powers. Lahti interviewee mentioned that the willingness to promote AM encountered a backlash especially in election 2021. Umeå and Kalundborg interviewee did not think elections will be a huge factor to affect AM. However, they did agree that they tend to postpone or holdback the scheme during the election because the situation was more complicated and unstable. They also emphasized the importance of clearly presenting their work to politicians. This can help them to understand the significance of AM planning and potentially shift their attitudes.

4.5.2 Organizational factors

Departmental collaboration

Interdepartmental collaboration is not formal compared to other procedure in these interviewed municipalities. The degree of collaboration differs, too. Hamburg was taking initiative to collaborate with other departments, and even considering other municipalities. Umeå has occasional collaborations with other departments. Hamburg and Umeå both felt the needs to do it and they consider it necessary to create more opportunities to collaborating between other departments. Kalundborg expressed the difficulties in collaboration regarding scheduling.

Umeå interviewee expressed the necessity for collaboration, but how to organize it efficiently and effectively is the difficult part. The major responsibilities lie in the traffic planners and Umeå interviewee highlighted that it was hard to decide which work can be redistribute to other departments and they are also willing to accept it. This might need resources to proceed which they usually lack in AM planning. In addition, lacking formal inclusion and procedure added the difficulties to the collaboration, which also may cause inefficiency to the current collaboration.

"Corporation just sometime takes time and find and where shall we make the cut? (Kalundborg)"

"Yeah, but today I would say yes, but we wanted to make it more and more collaboration between the departments. (Umeå)"

"You know, when we have our plans ready, digital and everything, we sent our plans to all the other districts and the colleagues have four weeks to make comments in those plans. (Hamburg)"

"So, this is why we appreciate that so many eyes are looking at our planning and then, in the end it really helps. (Hamburg)"

"It's really simple like net because you know we do not have the time to go through. (Hamburg)"

In Lahti, despite no formal collaboration procedures are established, they managed to foster a close cooperation and frequent meetings, largely due to small organization structure. There are fewer than 100 people in the group.

Hamburg had formed a close relationship with other departments and neighbouring municipalities. Hamburg interviewee stated that they will send schemes beforehand to them to collect feedback. The interviewee also expressed the feeling that they wanted to make further collaboration, yet lacking time and money.

Land jurisdiction

All interviewees emphasized the issue of land jurisdiction. In Lahti, major roads are owned by the national government rather than the local municipality, and a similar situation exists in the rest case cities. Road and land jurisdiction is divided between the municipality and the state, making it more complicated to obtain permission for changes to state-owned properties, thus adding challenges to advancing AM planning. while Kalundborg is actively promoting AM planning, the construction of a large corporation has further complicated the process. Kalundborg interviewees noted that they tried to negotiate with both municipal and state governments to make cyclists and pedestrians feel safer, but the process has been difficult and time-consuming.

The situation is more complicate in Hamburg, with more stakeholders involving in it. As Germany has very strict law to regulate trees, planning cycling and pedestrian lanes can be difficult when trees are in the way. Hamburg interviewee mentioned that they had to check every detail of the law to make sure they can cut down the tree legally. The law to cut the trees is very strict and detailed with the requirement to do it in from 1 March to 30 September (*Apply for Permission to Fell or Prune Trees*, n.d.; *Cutting down*

Trees on Your Own Property, n.d.). Moreover, persuading private landowners to give up part of their land (e.g., garden or driveway) for a bike lane or pedestrian lane can be tough when they think this violates their benefits and rights.

Organization attitudes

The general attitudes from higher level of departments have shifted. In Hamburg, it is a result of societal debates and the demands from the citizens that planning for walking and cycling is urgently needed. The administration has noticed a strong force to push them to change their attitudes and listen to citizens. Social media also played an important role here to push the mobility shift.

4.5.3 Resource factor

Funding is a universal issue mentioned by all interviewees. All interviewees stated that they need additional funding to better proceed their projects. Lacking funding can be lack of funding to initiate a project, to hire enough personnel to work on the project, to conduct research and gather necessary data. Personnel shortage was specifically mentioned by the interviewees (Hamburg, Umeå). Despite of lacking people, they still need finish the project within the original timeline, increasing the burden of planners. Hamburg had dedicated person working on the AM planning, which was very helpful for proceeding the project. Hamburg interviewee also highlighted the indispensable functions of experienced planners played in AM planning and experts in different areas can contribute to completing AM planning. Lahti interviewee emphasized particularly on the workload of the planners being overwhelming. Heavy workload had stopped planners from involving and following up the projects. This is also the result of personnel shortage. Politicians do not want to put more money into the project. The Umeå interviewee emphasized the need for additional personnel and resources for their projects. They expressed a desire for more time to work on these projects. They also pointed out that inadequate funding can result in the absence of essential toolkits needed to facilitate project work. Even when toolkits are available, they often lack the time to utilize or organize them efficiently. Furthermore, the interviewee highlighted that insufficient funding complicates document filing and analysis, leading to redundant procedures whenever the data is used.

Lahti interviewee pointed out that unlike some other cities, there are no toll roads for car traffic in Finland, and public transportation is not cost-neutral. This means the infrastructure for cars, which is very expensive, is funded by politicians. Building large intersections and extensive infrastructure costs a

significant amount of money. Despite the high costs, there is a prevailing attitude that such expenditures are necessary. Consequently, millions of euros are spent on car infrastructure, while relatively small amounts, such as two hundred thousand euros for a new cycling track or bus line, are often deemed too costly. This main issue, according to the interviewee, is that funding decisions are controlled by politicians, who prioritize car infrastructure over other modes of transport.

The Kalundborg interviewee identified funding as a crucial and motivating factor in executing their projects. Their confidence in delivering on promises to citizens fosters trust, which in turn facilitates the smooth execution of related travel surveys. Residents' awareness of potential infrastructure improvements contributes to their cooperative participation in these surveys. Sufficient funding can secure their promise, preventing the situation if they cannot do anything after they have promise the citizens. This breaking of promise can also jeopardize the truth from the citizens.

4.5.4 Stakeholder factor

From administration side, planning for AM means that it needs to take away space from other modes of transport or space. They need to persuade citizens regarding their movements. There are still complaints regarding active mobility planning taking over public space. Business owners and car users are powerful opponent groups to the AM development mentioned by Hamburg interviewee. Business owners mostly were afraid of AM planning will lose their customers due to the removal of parking space. Car owners were upset because driving experience will be worse. Hamburg interviewee thought it was because people were fear of change. This fear also added the difficulties for administration to operate their work. Public opposition can be vicious, according to Hamburg interviewee. Administrators sometimes have to put up with verbal abuse, sometimes even physical.

All interviewed municipalities had different degree of external collaboration with groups such as NGOs, private corporation, local communities, and figureheads. Collaboration with external organizations has been proven to be effective by the interviewees. Hamburg has organized citizen meetings to collect residents' opinions. Lahti has dedicated personnel to deal with comments on the website. Kalundborg was trying to get as many partners as possible to push forward AM projects. Currently they have established several campaigns to encourage citizens walk and cycle more. Moreover, they also worked with NGO to teach immigrants how to cycle.

4.6 Results of workshop

Political support was frequently highlighted as a critical factor by the interviewees. respondents noted that it is challenging to engage decision-makers with positive campaign results, as the added value of these initiatives is often overlooked. Long-term AM plans are often frequently disrupted by shifting policies, leading to less ambitious decisions being favoured. Politicians often prioritize new infrastructure and automobile projects that offer visible achievements for which they can take credit. This movement potentially undermines the long-term goals of sustainable transport development.

Organizational factors also emerged as crucial factors. Departmental collaboration and weak organization memory are two aspects participants mentioned. These issues hinder the retention and transfer of knowledge within organizations. Land jurisdiction is another significant challenge, involving complex and time-consuming negotiations, particularly when transforming ownership from private owners. Furthermore, the absence of comprehensive regulations and strategies in the participant cities reflects a broader institutional oversight, where active mobility is not sufficiently prioritized or integrated into the overall transportation and urban planning frameworks.

Resource constraints are also determinant of AM projects. Some participants highlighted the challenges of utilizing data effectively due to legal restrictions, data gaps, and insufficient toolkits. There is also a need for a dedicated person and expertise for specific field at municipal level to oversee and coordinate AM initiatives.

Strong car-centric attitudes and political pressure are significant issues identified by the participants. Lobbying efforts often prioritize the interests of car users, who are seen as the majority and whose votes carry substantial influence. This results in resistance to changes that would favor AM, such as lowering city center speed limits or altering parking configurations, which are perceived as threats by car users.

4.7 Results of survey

According to the responses, in terms of promoting year-round active mobility and winter maintenance, Kalundborg, Umeå, Lahti, and Hamburg have been proactive in continuing the existing measurements and implementing new ones. All responses identified several areas where their municipalities could improve the integration of walking and cycling. Regarding seasonal variation, Umeå and Lahti expressed positive attitudes when designing both walking and cycling infrastructure, while Hamburg showed very low consideration for this aspect. Financial resources were the most frequently mentioned

challenge, followed by politics, organizational structure and identities, legislation, and interpersonal communication. All cities have been involved in the collaboration with external partners, despite the measures they took varying. In terms of political climate regarding promoting active mobility, the respondents generally held neutral attitudes toward walking. However, Lahti and Kalundborg had opposing views on cycling, with Umeå expressing relatively positive attitudes.

5 Discussion

5.1 Summary of findings

5.1.1 Resource factor

All interviewees have mentioned the financial barriers when promoting AM. The function of funding has been emphasized in successfully implementation of AM. Without it, there will be a series of chain reactions, leading to lacking personnel, toolkits, and budget to start projects.

Most implementation of AM planning happens in local level, though the requirement may come from the higher administration (Robartes et al., 2021). This requires local government to acquire funding themselves. Getting funding has been tricky for AM planning compared to funding for the automobility like highway construction, despite that these automobile projects consume much more money. Mentioned explicitly by Lahti interviewee, politicians will spend millions of fundings on highway projects and not willing to put hundred thousand of money to AM projects. Politicians still are more willing to allocate funding to automobile projects as they are directly related to economic development, despite that walking and cycling infrastructure is cheap compared to main road upgrades and high-speed rail (Aldred et al., 2019). This may because of the mindset of the upper-level politicians that they prefer using strategies which need less money, such as encouragement, training, and promotion (Aldred et al., 2019; Golbuff & Aldred, 2011). To tackle this circumstance, interviewees (e.g., Lahti) have highlighted the possibility of implementing AM planning under the guise of other planning projects. For instance, Lahti planners utilized a commercial development funding to upgrade AM infrastructure instead of applying for dedicated funding which will be difficult. This is in line with the findings in Canadian situation, where they use certain strategies such as piggybacking on public works projects or using external grants and funding. (Wilson & Mitra, 2020). It shows the dilemma that direct funding is not easy to get, therefore engineers are forced to be creative to come up with other approach.

Personnel responsible for AM planning is also essential for the AM planning. Most case municipalities also expressed the need for more staff working on AM. Hamburg interviewee mentioned the importance of hiring experts in different fields to make cycling experience more accessible and pleasant for all age and gender. Expertise is essential for making effective active mobility investment and designing user-friendly and attractive cycling networks (Marije De Boer & Caprotti, 2017). Similarly, a modal shift towards active mobility requires the creation of more supportive environments (Bozovic et al., 2021;

Sallis et al., 2015). The transition may present systematic barriers or risks for walking (Bozovic et al., 2021; International Transport Forum, 2021; Mindell & Karlsen, 2012). Therefore, dedicated professionals are needed to deal with the complexity such as unclear barriers and who suffers from them.

With increased funding and attention distributed to AM, it becomes easier to identify the impact of socio-demographic factor on AM. Kalundborg, for instance, has the resource to conduct travel surveys within the municipality, enabling for a better understanding of the travel behaviour of various demographic groups. Gaining insights into socio-demographic backgrounds can lead to develop more effective and targeted strategies.

5.1.2 Organization factor

Interdepartmental collaboration is not uncommon in the case cities, but there is no official procedure or regulation outlining how responsibilities should be allocated. There appears to be a considerable variation among municipalities in terms of the content of their strategies and how they utilize these strategies as tools for capacity-building (Alm & Koglin, 2022). Hamburg has established active collaboration relationship with other departments and surrounding municipalities. Hamburg interviewee mentioned that they have active communication and opinion exchange. This has been proven to be effective for the development AM. Lahti has slightly different situation. The responsibility of developing AM lies in transport engineers. However, Lahti planning organization is small, and everyone has close relationship and is familiar with each other's work. Moreover, they have weekly meetings to discuss the work together. This enables them to work together despite lacking the formal procedure to include AM into the whole planning system. In Umeå, it is ingrained in the urban and transport planning, which means that they do not have dedicated procedure for AM planning. Without the formal inclusion into the planning system, it may encounter some difficulties when collaborating with each other. Unresolved issues are often transferred among different departments, resulting in no one being willing to assume the responsibility. Included case municipalities, except for Hamburg having dedicated department for AM, have transport engineers or urban planners to do AM projects. Though emphasis from interviewees that a broad political consensus has been reached to co-operate in the organization and know what the others are doing and what expertise is available and lacking.

The stage where AM planning is integrated in the whole planning procedure is different in these case municipalities. Most case municipalities have not officially included AM planning into the planning process. In Lahti, the interviewee highlighted the need for active mobility planning being the responsibility of the whole planning organization. The reason why Lahti formed a

cordial atmosphere in planning AM was mentioned by interviewee that they were a small team which everyone knows everyone's work and they had regular meetings with all team members to discuss the work. Hamburg is more advanced and well-developed in integrating AM into planning and transport system compared to other case cities

5.1.3 Political factor

Political support has been one crucial factor which determine the trends of AM projects. Car users grouped a strong opposition force, putting pressure on the politicians. Politicians, with their votes in mind, will not jeopardize their interests too much. As all interviewed municipalities have been or are currently involved in BATS projects, politicians have realized the importance of AM and put on efforts on the promotion of AM. Though from the interview, there lacks a strong leadership in the AM planning. Therefore, this support appears to be weak and easily disrupted by other factors such as prioritizing economic development, opposition from other departments, and politicians feeling they have done enough. Political leadership here emphasize on the resolution to facilitate the prioritization of AM. In Lahti, politicians control the funding allocation. Half of the politicians are conservative and wanted to prioritize economic development, such as commercial development and residential development, and viewed AM as part of general transportation planning, which can be done in parallel without special attention. Also, Lahti has accomplished several goals in promotion of AM in the past few years. Politicians believed that they have achieved their aims, and the funding should be allocated to more "prioritized matter" which is economic development. This no political leadership leads to the stagnation of AM development. For Umeå and Kalundborg, AM planning is a new topic which are recently brought up to their agenda. The political support has been quite proactive, and the interviewees also admitted feeling the motivate from their politicians. It allows them to do more plans without feeling the constrains. The Swedish government aimed that transport emissions of carbon dioxide need to be reduced by at least 70 percent by 2030, based on the 2010 level, in order to reach the stage target (Trafikanalys, 2022). Though from the interviewee, the implementation in local level seems to be lacking. In Umeå, political decided strategy for reduced car travel is lacking in the municipal level, though now more funding is allocated to AM projects.

Land jurisdiction is viewed as one major obstacle to develop coherent and comprehensive AM network. In Nordic countries, the land jurisdiction of national roads and highways belongs to the national government. Hamburg interviewees also highlighted the difficulties when designing the new route to meet the requirements both from the regulations and the owners. Kalundborg interviewee especially mentioned expropriation is hard and takes

time and money. Negotiation requires planners' skills to talk to different stakeholders. In addition, time and money are also essential, which are often lack in AM projects. Lahti interviewee emphasized the importance of building a coherent AM network, especially for cycling. Currently, despite of not frequently mentioned in the interviews, these case municipalities appear to lack the horizontal and vertical linkages in the municipalities to reduce the obstacles.

5.2 Recommendations for development in practice

5.2.1 Strategic and integrated planning for AM

Planners need to navigate various conflicts of interest in developing sustainable plans. Effective AM planning requires the coordination of measures across multiple fields of expertise and practice, while also considering the broader social and cultural contexts that influence travel behaviours infrastructure use (Aldred, 2012; McLeod et al., 2020). Studies in Copenhagen emphasize that successful AM infrastructure planning requires a team of experts with diverse experience (Zhao et al., 2018). Hamburg interviewee also underscored the importance of experienced planners from different fields to address the diverse challenges associated with AM planning. For instance, gender planning and safety planning are essential for enhancing the walking and cycling experience, thereby encouraging more people to walk and cycle. Training planners and practitioners can refine the planning efforts (Deffner & Hefter, 2015; Wang, 2018). Additionally, Lahti interviewee suggested mandatory training for engineers, noting that planners generally welcome these sessions as opportunities to acquire new knowledge and break from their regular routines.

Active mobility should be integrated with other modes of transport to establish a comprehensive multimodal network and aligned with broader urban planning and policies framework to ensure cohesive and sustainable urban mobility (Deffner et al., 2012; Gerike & Jones, 2015; Wang, 2018). Without full integration into the planning process, interviewees noted that they sometimes have to develop implicit schemes to execute AM planning. Lahti interviewee mentioned they use a commercial development budget to fund a cycling plan. Similarly, Umeå interviewee stated that while efforts were made to integrate AM planning from the outset, the municipality lacks a long history of such planning, and it is not yet formally included in the process. Exploring the full potential of active mobility within the broader transport system and urban planning can enhance transport efficiency and potentially increase financial resources for active mobility initiatives (Gerike & Jones, 2015; Wang, 2018). In more car-centric planning contexts, the needs of

pedestrians and cyclists are often considered too late in the project development process, undermining the quality of the resulting infrastructure (Koglin, 2015b; McLeod et al., 2020).

5.2.2 Firm political support and involved mindset of politicians

The importance of strong political commitment has been emphasized by all interviewees and many researchers (Aldred, 2012; Aldred et al., 2019; Alm & Koglin, 2022, 2022; Gaffron, 2003, 2003, 2003; Haustein et al., 2020; Koglin, 2015b; Marije De Boer & Caprotti, 2017; Robartes et al., 2021; Smith, 2016). In Hamburg, political courage and cross-party political support have been highlighted as essential for ensuring long-term and consistent planning and implementation (Wang, 2018). This view is echoed by the interviewees from municipalities consisting of multiple political parties, who stressed the importance of gaining support from politicians more favourable to automobility.

Politicians need to recognize their role as instigators of a sustainable mobility agenda and should actively invite local administrations for professional support in making unpopular decisions regarding personal mobility. (Ingeborgrud et al., 2024). The direct involvement of local politicians in planning discussions and decision fosters close cooperation between political and professional stakeholders. This collaboration allows planners to educate politicians on the benefits of sustainable mobility plans, ultimately leading to strong political backing and a shared vision for AM infrastructure development (Ingeborgrud et al., 2024). This strategy of changing politicians' mindset was also highlighted by the interviewees. When politicians understand the importance of AM, they become more willing to allocate funds towards it. The interviewees from Kalundborg, Hamburg, and Umeå underscored the necessity of keeping them well-informed.

5.2.3 Sufficient and continuous resource for AM

The resource includes sufficient funding allocation to equip AM planning with the necessary expertise, toolkit, and personnel. Example in Trondheim has shown the importance of mediation practice of planners in shaping planning cultures and governance regimes. All these efforts require time and fundings to accomplish, which the interviewees all highlighted during the interviews that they either lacked one or both. Hamburg interviewee mentioned the importance of hiring people with different expertise which can solve certain problems emerged in recent years, such as gender equality, accessibility. It is also emphasized by Curtis (2008) that planners and engineers need to gain new skills. Enhancing these experiences, particularly for cycling, will shift its perception from a sports activity to a daily mode of

travel. Giving engineers enough time period to fully is also underscored by Umeå interviewee. Funding is especially vital for municipalities with long snow season. To promote year-round active mobility, offering pleasant travel experience in severe weather conditions is indispensable.

One effective solution to secure funding is to seek for external funding (Alm & Koglin, 2022; De Loë et al., 2002). This strategy was mentioned by Lahti interviewee, who noted that they use funding from commercial development plans to develop cycling lanes when AM planning is postponed on the planning agenda.

5.2.4 Raise public awareness towards AM

Interviewees and researchers emphasize the importance of citizen commitment and involvement in enhancing municipalities' capacity to implement and achieve their established strategies and objectives (De Loë et al., 2002). Measurements like communication, public education, and outreach programs are effective to promote AM. Active mobility, especially for cycling, often is predominately view as sports activity. This perception should be changed with the help with the government-led public campaign. Kalundborg interviewee mentioned they have campaign budget to do more public campaign activities such as travel survey to understand residents' behaviors. Kalundborg highlighted the importance of collaborating with NGOs to work on promotion. Hamburg interviewee mentioned it is important to convince residents that it is safe and comfortable to use the infrastructure. In that sense, public campaign is important to spread the information to residents. Hamburg interviewee mentioned during their work, they communicated to residents frequently not only to inform everyone about the planning procedure and progress but also gathering their opinions towards their surroundings. She also emphasized because of this transparent exchange of information, making their following work easier. Lahti has the website page to deal with residents' comments. 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 active mobility, thereby increasing the social capacity (Alm & Koglin, 2022).

5.3 Limitations

This thesis attempts to find out the institutional factors that prevent to promote year-round active mobility. Since every municipality have diffident political backgrounds and institution settings, the problems of promoting walking and cycling are local and should be analysed case by case. To fully understand why AM is marginalized, it needs to investigate further into the planning system. The results of this study are therefore limited.

Regarding methodology, each case city has 1-2 interviewees, the sample is relatively small to find out the answers to the problems rooted in the institutions. Additionally, due to lacking the interview experience, interview flows may not go as smoothly as I imagined. Some interviewees may not open to answer the questions, leaving the answer plain and simple. Lacking interview technique can prevent interviewees from speaking the inner voice. Furthermore, the result get from the interview may not truly reflect the problems rooted in the institution. Also, some interviewee may act defensive when asking the problems in their organizations. This makes the result analyses more difficult as they rely heavily on the answer. Although the interview answers tend to show repetitive results and the contents align with the existing research, it still will be beneficial if more interviews could be arranged, and more in-depth answers may be obtained from the interviewees.

Although this study has certain limitations, it opens up significant potential for future research on the institutional barriers to active mobility. Further studies could examine how institutional frameworks, policies, and practices affect the development and execution of active mobility initiatives. Understanding these barriers would offer key insights into how municipalities and governments can address them to better support active mobility.

6 Conclusion

The primary purpose of this thesis is to unpack the institutional barriers hindering the normalization of year-round active mobility. It is no doubt that under broader societal socio-demographics and mobility culture contexts, active mobility planning has different levels of achievements and is perceived differently. In these northern European cities, geography and climate post additional challenges to it, making it harder to promote it as a mode of transport. Through this research, four key factors are identified as significant obstacles: political, administrative, resource-related, and stakeholder-related factors. The extent to which these factors influence active mobility varies across the case municipalities due to differences in political landscapes and urban planning contexts.

Political factors are the most decisive factor influencing active mobility projects among the case cities. Political courage and the willingness to challenge car-centric norms by restricting car use can significantly reduce barriers for planners, easing the implementation of new projects.

A common challenge for these cities, and many cities across Europe, is the deeply entrenched car culture, compounded by their relatively late start in active mobility planning compared to capital cities. These issues are closely tied to politics, as transport and urban planning are often politically charged. Of the studied municipalities, Hamburg-Altona is more advanced in active mobility planning, with a dedicated department for active mobility. Nevertheless, it remains predominantly car-oriented, as confirmed by interviewees. Achieving this shift is challenging, as politicians must balance the demands of a voter base significantly swayed by pro-car lobbies. While Umeå, Kalundborg, and Hamburg-Altona expressed that they received political support, the backing appeared neither strong nor unwavering. This aligns with the findings of Alm & Koglin (2022), Koglin (2015b), Koglin & Pettersson (2017), who argued that to promote active mobility effectively, strategic planning and policy documents must shift focus from automobility to active mobility.

To enhance effectiveness, the responsibility of active mobility should also be defined and formalized across different planning departments. Active mobility planning should be integrated into official planning documents, policies, proposals, and actions. Additionally, developing a solid theoretical foundation for active mobility planning is crucial. Such a foundation would enable a more scientific approach, contributing to a better understanding of the needs of pedestrians and cyclists, real-world practices and experiences, and the identities of pedestrians and cyclists (Koglin & Rye, 2014).

It is essential to establish and strengthen both vertical and horizontal linkages among various departments and governmental bodies. Enhancing horizontal linkages requires coordinated efforts across multiple municipal departments, with clear and formalized responsibilities for areas such as mobility management, strategic planning, financing, and local traffic regulations (Alm & Koglin, 2022). Additionally, municipalities should improve vertical cooperation with neighboring municipalities and regional and national governmental bodies to ensure alignment with broader transport goals. Such collaboration can help with establishing a more cohesive active mobility network according to Lahti interviewee. The lack of vertical coordination with higher administrative levels was a common challenge among the case municipalities, many of which only recently began focusing on active mobility. In Hamburg-Altona, progress has been made in formalizing active mobility within the official planning process and fostering collaboration with other departments and neighbouring municipalities. In contrast, the three Nordic municipalities still operate in a more informal or ad-hoc manner, often relying on a piecemeal approach.

Securing sufficient resources is undeniably crucial. Without essential factors such as financial support, personnel, and planning toolkits, planners' ability to develop and maintain a well-designed and accessible AM infrastructure is limited. The lack of dedicated personnel for active mobility further exacerbates the challenge of promoting AM. Without a specialized professional, it becomes difficult to sustain long-term projects and address the specific needs of pedestrians and cyclists. Furthermore, the absence of standardized toolkits to guide the planning and implementation of active mobility initiatives results in inconsistencies across cities, making it difficult to apply best practices and achieve comprehensive outcomes

For future research, it is crucial to further explore the power dynamics within the related departments, as well as their interactions with political authorities. Additionally, further examination of the implementation processes and effectiveness of different measurements is necessary. While common barriers to active mobility planning exist across cities, it is important to analyze each city's specific context on a case-by-case basis. Gaining insights into local barriers will enable planners and engineers to more effectively identify and address challenges, ultimately strengthening the role of active mobility within broader transport systems.

References

Aldred, R. (2012). Governing transport from welfare state to hollow state: The case of cycling in the UK. *Transport Policy*, *23*, 95–102. https://doi.org/10.1016/j.tranpol.2012.05.012

Aldred, R., Watson, T., Lovelace, R., & Woodcock, J. (2019). Barriers to investing in cycling: Stakeholder views from England. *Transportation Research Part A: Policy and Practice*, *128*, 149–159. https://doi.org/10.1016/j.tra.2017.11.003

Alimohamadi, H. (2024). *ENHANCING SUSTAINABLE COMMUTING STRATEGIES FOR LAHTI CITY: INTEGRATING MULTI-THEMATIC INTERVENTIONS FOR EFFECTIVE URBAN MOBILITY*.

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*, 100029. https://doi.org/10.1016/j.urbmob.2022.100029

Apply for permission to fell or prune trees. (n.d.). Retrieved July 18, 2024, from https://www.hamburg.com/publicservice/info/11929787/n0/

Assunçao-Denis, M.-È., & Tomalty, R. (2019). Increasing cycling for transportation in Canadian communities: Understanding what works. *Transportation Research Part A: Policy and Practice*, *123*, 288–304. https://doi.org/10.1016/j.tra.2018.11.010

Balkmar, D. (2020). Cycling politics: Imagining sustainable cycling futures in Sweden. *Applied Mobilities*, *5*(3), 324–340. https://doi.org/10.1080/23800127.2020.1723385

Baltes, M. R. (2005). *Integration of bicycles and transit: A synthesis of transit practice*. Transportation Research Board.

BATS. (n.d.). *Interreg Baltic Sea Region*. Retrieved June 8, 2024, from https://interreg-baltic.eu/project/bats/

Behörde für Verkehr und Mobilitätswende. (2023). *Mobilität in Hamburg 2022*.

Bergström, A., & Magnusson, R. (2003). Potential of transferring car trips to bicycle during winter. *Transportation Research Part A: Policy and Practice*, *37*(8), 649–666. https://doi.org/10.1016/S0965-8564(03)00012-0

Böhm, S., Jones, C., Land, C., & Paterson, M. (2006). Introduction: Impossibilities of Automobility. *The Sociological Review*, *54*(1_suppl), 3–16. https://doi.org/10.1111/j.1467-954X.2006.00634.x

Bonham, J., & Cox, P. (2010). The disruptive traveller? A Foucauldian analysis of cycleways. *Road and Transport Research*, *19*(2), 42–53. Scopus.

Bourgeault, I. L., Dingwall, R., & De Vries, R. G. (Eds.). (2013). *The SAGE handbook of qualitative methods in health research* (Paperback edition). SAGE.

Bozovic, T., Hinckson, E., Stewart, T., & Smith, M. (2021). How to improve the walking realm in a car-oriented city? (Dis)agreements between professionals. *Transportation Research Part F: Traffic Psychology and Behaviour*, *81*, 490–507. https://doi.org/10.1016/j.trf.2021.06.011

Brown, J. R., Morris, E. A., & Taylor, B. D. (2009). Planning for Cars in Cities: Planners, Engineers, and Freeways in the 20th Century. *Journal of the American Planning Association*, *75*(2), 161–177. https://doi.org/10.1080/01944360802640016

Buehler, R., & Pucher, J. (2011). Sustainable Transport in Freiburg: Lessons from Germany's Environmental Capital. *International Journal of Sustainable Transportation*, *5*(1), 43–70. https://doi.org/10.1080/15568311003650531

Carr, D. (2013, March 15). In the City of Bikes: The Story of the Amsterdam Cyclist. *Booklist*, *109*(14), 40. Gale Literature Resource Center.

CitiCAP. (n.d.). Lahti. Retrieved September 16, 2024, from https://www.lahti.fi/kaupunki-ja-paatoksenteko/strategia-ja-kehittaminen/hankkeet/citicap/

City of Lahti. (2023). *Transportation and streets*. Lahti. https://www.lahti.fi/en/housing-and-environment/transportation-and-streets/

Coding Qualititive Data | Overview, Methods, Software. (n.d.). ATLAS.Ti. Retrieved June 13, 2024, from https://atlasti.com/guides/qualitative-research-guide-part-2/data-coding

Cole, R., Burke, M., Leslie, E., Donald, M., & Owen, N. (2010). Perceptions of representatives of public, private, and community sector institutions of the barriers and enablers for physically active transport. *Transport Policy*, *17*(6), 496–504. https://doi.org/10.1016/j.tranpol.2010.05.003

Curtis, C. (2008). Planning for sustainable accessibility: The implementation challenge. *Transport Policy*, *15*(2), 104–112. https://doi.org/10.1016/j.tranpol.2007.10.003

Cutting down trees on your own property. (n.d.). Engel & Völkers. Retrieved July 18, 2024, from https://www.engelvoelkers.com/de/en/resources/cutting-down-trees-on-your-own-property

De Loë, R. C., Di Giantomasso, S. E., & Kreutzwiser, R. D. (2002). Local Capacity for Groundwater Protection in Ontario. *Environmental Management*, *29*(2), 217–233. https://doi.org/10.1007/s00267-001-0026-7

Deffner, J., & Hefter, T. (2015). Sustainable mobility cultures and the role of cycling planning professionals. *ISOE Policy Brief, 3/2015*.

Deffner, J., Ziel, T., Hefter, T., & Rudolph, C. (2012). *Handbook on cycling inclusive planning and promotion. Capacity development material for the multiplier training within the mobile2020 project*.

DiCicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. *Medical Education*, *40*(4), 314–321. https://doi.org/10.1111/j.1365-2929.2006.02418.x

Egan, R., & Caulfield, B. (2024). There's no such thing as cycle traffic: A critical discourse analysis of public opposition to pro-cycle planning. *Journal of Cycling and Micromobility Research*, *2*, 100014. https://doi.org/10.1016/j.jcmr.2024.100014

Follmer, R., Pirsig, T., Belz, J., Brand, T., Eggs, J., Ermes, B., Gruschwitz, D., Kellerhoff, J., & Roggendorf, M. (2020). *Mobilität in Deutschland –*

MiD Regionalbericht Stadt Hamburg. Studie von infas, DLR, IVT und infas 360 im Auftrag des Bundesministeriums für Verkehr und digitale Infrastruktur (FE-Nr. 70.904/15) und der Stadt Hamburg.

Furness, Z. M. (2010). *One less car: Bicycling and the politics of automobility*. Temple University Press.

Gaffron, P. (2003). The implementation of walking and cycling policies in British local authorities. *Transport Policy*, *10*(3), 235–244. https://doi.org/10.1016/S0967-070X(03)00024-6

Galletta, A., & CROSS, W. E. (2013). *Mastering the Semi-Structured Interview and Beyond*. NYU Press; JSTOR. http://www.jstor.org/stable/j.ctt9qgh5x

Gerike, R., & Jones, P. (2015). Strategic Planning of Bicycle Networks as Part of an Integrated Approach. *Cycling Futures*.

Golbuff, L., & Aldred, R. (2011). *Cycling Policy in the UK: A historical and thematic overview*.

Hamburg Climate, Weather By Month, Average Temperature (Hamburg, Germany)—Weather Spark. (n.d.). Retrieved June 13, 2024, from https://weatherspark.com/y/68301/Average-Weather-in-Hamburg-Germany-Year-Round

Hamburg climate: Weather Hamburg & temperature by month. (n.d.). Retrieved June 13, 2024, from https://en.climate-data.org/europe/germany/hamburg/hamburg-69/

Handy, S., Van Wee, B., & Kroesen, M. (2014). Promoting Cycling for Transport: Research Needs and Challenges. *Transport Reviews*, *34*(1), 4–24. https://doi.org/10.1080/01441647.2013.860204

Hardon, A. (2004). *How to investigate the use of medicines by consumers*.

Harms, L., Bertolini, L., & Brömmelstroet, M. T. (2016). Performance of Municipal Cycling Policies in Medium-Sized Cities in the Netherlands since 2000. *Transport Reviews*, *36*(1), 134–162. https://doi.org/10.1080/01441647.2015.1059380

Haustein, S., Koglin, T., Nielsen, T. A. S., & Svensson, Å. (2020). A comparison of cycling cultures in Stockholm and Copenhagen. *International Journal of Sustainable Transportation*, *14*(4), 280–293. https://doi.org/10.1080/15568318.2018.1547463

Høj, J., Testmann, L., & Høj, J. (2022). *Udarbejdet af: Kontrolleret af: Godkendt af: Dato: Version: Projekt nr.:*

Holloway, I. (Ed.). (2005). *Qualitative research in health care*. Open Univ. Press.

Ingeborgrud, L., Suboticki, I., Ryghaug, M., & Skjølsvold, T. M. (2024). Planners as middle actors in facilitating for city cycling. *Mobilities*, *19*(1), 103–115. https://doi.org/10.1080/17450101.2023.2186799

International Transport Forum. (2021). *Reversing Car Dependency: Summary and Conclusions*. OECD. https://doi.org/10.1787/bebe3b6e-en

Irvin, R. A., & Stansbury, J. (2004). Citizen Participation in Decision Making: Is It Worth the Effort? *Public Administration Review*, *64*(1), 55–65. https://doi.org/10.1111/j.1540-6210.2004.00346.x

Isaksson, K. (2014). Mobility transitions: The necessity of utopian approaches. In *Green Utopianism* (pp. 115–130). Routledge.

Isaksson, K., Antonson, H., & Eriksson, L. (2017). Layering and parallel policy making – Complementary concepts for understanding implementation challenges related to sustainable mobility. *Transport Policy*, *53*, 50–57. https://doi.org/10.1016/j.tranpol.2016.08.014

Kallio, H., Pietilä, A., Johnson, M., & Kangasniemi, M. (2016a). Systematic methodological review: Developing a framework for a qualitative semi-structured interview guide. *Journal of Advanced Nursing*, *72*(12), 2954–2965. https://doi.org/10.1111/jan.13031

Kallio, H., Pietilä, A., Johnson, M., & Kangasniemi, M. (2016b). Systematic methodological review: Developing a framework for a qualitative semi-structured interview guide. *Journal of Advanced Nursing*, *72*(12), 2954–2965. https://doi.org/10.1111/jan.13031

Kalundborg Climate, Weather By Month, Average Temperature (Denmark)—Weather Spark. (n.d.). Retrieved June 13, 2024, from https://weatherspark.com/y/71535/Average-Weather-in-Kalundborg-Denmark-Year-Round

Kalundborg climate: Weather Kalundborg & temperature by month. (n.d.). Retrieved June 13, 2024, from https://en.climate-data.org/europe/denmark/region-zealand/kalundborg-7523/?utm_content=cmp-true

Koglin, T. (2013). *Vélomobility—A critical analysis of planning and space*. https://doi.org/10.13140/2.1.1004.6240

Koglin, T. (2015a). Organisation does matter – planning for cycling in Stockholm and Copenhagen. *Transport Policy*, *39*, 55–62. https://doi.org/10.1016/j.tranpol.2015.02.003

Koglin, T. (2015b). Vélomobility and the politics of transport planning. *GeoJournal*, *80*(4), 569–586. https://doi.org/10.1007/s10708-014-9565-7

Koglin, T. (2017). Urban mobilities and materialities – a critical reflection of "sustainable" urban development. *Applied Mobilities*, *2*(1), 32–49. https://doi.org/10.1080/23800127.2017.1285169

Koglin, T., & Pettersson, F. (2017). Changes, Problems, and Challenges in Swedish Spatial Planning—An Analysis of Power Dynamics. *Sustainability*, *9*(10), 1836. https://doi.org/10.3390/su9101836

Koglin, T., & Rye, T. (2014). The marginalisation of bicycling in Modernist urban transport planning. *Journal of Transport & Health*, *1*(4), 214–222. https://doi.org/10.1016/j.jth.2014.09.006

Lahti Climate, Weather By Month, Average Temperature (Finland)—Weather Spark. (n.d.). Retrieved June 13, 2024, from https://weatherspark.com/y/92768/Average-Weather-in-Lahti-Finland-Year-Round

Lahti climate: Weather Lahti & temperature by month. (n.d.). Retrieved June 13, 2024, from https://en.climate-data.org/europe/finland/lahti/lahti-670/

Lahti map service. (n.d.). Retrieved June 12, 2024, from https://kartta.lahti.fi/ims/en/Map

Lahti topographic map, elevation, terrain. (n.d.). Topographic Maps. Retrieved September 5, 2024, from https://en-gb.topographic-map.com/map-jk9nh/Lahti/?center=60.99496%2C25.67362&zoom=11

Lindelöw, D., Koglin, T., & Svensson, Å. (2016). Pedestrian planning and the challenges of instrumental rationality in transport planning: Emerging strategies in three Swedish municipalities. *Planning Theory & Practice*, *17*(3), 405–420. https://doi.org/10.1080/14649357.2016.1199813

Malik, M. H. A., & Omar, E. N. (2024). *Evaluating Humanitarian Flood Relief Supply Chain Efficiency*. Mazrul Hisyam-928. https://doi.org/10.15405/epsbs.2024.05.75

Marije De Boer, M. A. H., & Caprotti, F. (2017). Getting Londoners on two wheels: A comparative approach analysing London's potential pathways to a cycling transition. *Sustainable Cities and Society*, *32*, 613–626. https://doi.org/10.1016/j.scs.2017.04.019

McLeod, S., Babb, C., & Barlow, S. (2020). How to 'do' a bike plan: Collating best practices to synthesise a Maturity Model of planning for cycling. *Transportation Research Interdisciplinary Perspectives*, *5*, 100130. https://doi.org/10.1016/j.trip.2020.100130

Mindell, J. S., & Karlsen, S. (2012). Community Severance and Health: What Do We Actually Know? *Journal of Urban Health*, *89*(2), 232–246. https://doi.org/10.1007/s11524-011-9637-7

Projectmanager, B. (2024, January 5). BATS-project kicks off to position active mobility as a year-round transport option. *Interreg Baltic Sea Region*. https://interreg-baltic.eu/project-posts/bats-project-kicks-off-to-position-active-mobility-as-a-year-round-transport-option/

Pucher, J., Buehler, R., & Seinen, M. (2011a). Bicycling renaissance in North America? An update and re-appraisal of cycling trends and policies. *Transportation Research Part A: Policy and Practice*, *45*(6), 451–475. https://doi.org/10.1016/j.tra.2011.03.001

Pucher, J., Buehler, R., & Seinen, M. (2011b). Bicycling renaissance in North America? An update and re-appraisal of cycling trends and policies. *Transportation Research Part A: Policy and Practice*, *45*(6), 451–475. https://doi.org/10.1016/j.tra.2011.03.001

Rietveld, P., & Stough, R. R. (Eds.). (2005). *Barriers to Sustainable Transport* (0 ed.). Routledge. https://doi.org/10.4324/9780203005040

Robartes, E., Chen, E., Chen, T. D., & Ohlms, P. B. (2021). Assessment of local, state, and federal barriers to implementing bicycle infrastructure: A Virginia case study. *Case Studies on Transport Policy*, *9*(2), 488–496. https://doi.org/10.1016/j.cstp.2021.02.004

Sallis, J. F., Spoon, C., Cavill, N., Engelberg, J. K., Gebel, K., Parker, M., Thornton, C. M., Lou, D., Wilson, A. L., Cutter, C. L., & Ding, D. (2015). Co-benefits of designing communities for active living: An exploration of literature. *International Journal of Behavioral Nutrition*

and Physical Activity, *12*(1), 30. https://doi.org/10.1186/s12966-015-0188-2

Scherer, I. L. (2023). *A Framework for Understanding Winter Cycling Culture*.

Schreier, M. (2012). *Qualitative Content Analysis in Practice*. SAGE Publications Ltd. https://doi.org/10.4135/9781529682571

Smith, M. (2016). Cycling on the verge: The discursive marginalisation of cycling in contemporary New Zealand transport policy. *Energy Research & Social Science*, *18*, 151–161. https://doi.org/10.1016/j.erss.2016.02.002

Stead, D. D. (2001). *Institutional Arrangements: Experiences and Lessons from Denmark, England and Germany*.

The Ultimate Guides to Qualitative Research. (n.d.). ATLAS.Ti. Retrieved June 13, 2024, from https://atlasti.com/guides

Trafikanalys. (2022). *På väg mot effektiva, kapacitetsstarka och hållbara godstransporter?*

Umeå Climate, Weather By Month, Average Temperature (Sweden)—Weather Spark. (n.d.). Retrieved June 13, 2024, from https://weatherspark.com/y/86542/Average-Weather-in-Ume%C3%A5-Sweden-Year-Round

Umeå climate: Weather Umeå & temperature by month. (n.d.). Retrieved June 13, 2024, from https://en.climate-data.org/europe/sweden/vaesterbottens-laen/umea-450/

Väkeväinen, M. (2023, February 24). Kestävillä kulkutavoilla liikkumisen osuus laski Päijät-Hämeessä. *Päijät-Hämeen Liitto*. https://paijat-hame.fi/kestavilla-kulkutavoilla-liikkumisen-osuus-laski-paijat-hameessa/

Van Der Meulen, J., & Mukhtar-Landgren, D. (2021). Deconstructing accessibility – discursive barriers for increased cycling in Sweden. *Mobilities*, *16*(4), 493–508. https://doi.org/10.1080/17450101.2021.1902240

Vigar, G. (2000). Local "Barriers" to Environmentally Sustainable Transport Planning. *Local Environment*, *5*(1), 19–32. https://doi.org/10.1080/135498300113246

Wang, L. (2018). Barriers to Implementing Pro-Cycling Policies: A Case Study of Hamburg. *Sustainability*, *10*(11), 4196. https://doi.org/10.3390/su10114196

What is Content Analysis? | Definition, Advantages, Software. (n.d.). ATLAS.Ti. Retrieved June 13, 2024, from https://atlasti.com/guides/qualitative-research-guide-part-2/content-analysis

Wilson, A., & Mitra, R. (2020). Implementing cycling infrastructure in a politicized space: Lessons from Toronto, Canada. *Journal of Transport Geography*, *86*, 102760. https://doi.org/10.1016/j.jtrangeo.2020.102760

Wyman, O. (n.d.). *How Paris Performs Across Urban Mobility Targets*. Oliver Wyman Forum. Retrieved August 31, 2024, from

https://www.oliverwymanforum.com/mobility/urban-mobility-readiness-index/paris.html

Zhao, C., Carstensen, T. A., Nielsen, T. A. S., & Olafsson, A. S. (2018). Bicycle-friendly infrastructure planning in Beijing and Copenhagen—Between adapting design solutions and learning local planning cultures. *Journal of Transport Geography*, *68*, 149–159. https://doi.org/10.1016/j.jtrangeo.2018.03.003