GENDER SMART MOBILITY

CONCEPTS, METHODS, AND PRACTICES

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Gender Smart Mobility

This book presents gender and diversity in smart transport as a cutting-edge issue in urban contexts around the globe.

It addresses new challenges and possibilities related to the smart transport sector. It demonstrates how gender and diversity are entangled in concepts and various forms of current smart mobility practices in policy, planning, and innovation. *Gender Smart Mobility* is presented as a game changer for future transport planning and mobility practices and how smart mobility technologies and practices might be created as a common good for all. The readers are presented with fresh approaches ranging from intersectional and visual analysis of smart mobility, gender scripts and language, to gendered innovation of design and planning. Moreover, the readers will encounter engaging boxed features which present historical, cross-cultural, and methodological examples and pose questions for critical thinking.

This book meets a need for a systematic, accessible, and practical introduction and is of interest to city planners, transport providers, and politicians as well as the general public. It will also be a valuable reference for graduate and postgraduate students at technical universities, schools of architecture and planning, and for students and faculties in the social sciences, humanities, and IT and design studies.

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Transport and Mobility

The inception of this series marks a major resurgence of geographical research into transport and mobility. Reflecting the dynamic relationships between socio-spatial behaviour and change, it acts as a forum for cutting-edge research into transport and mobility, and for innovative and decisive debates on the formulation and repercussions of transport policy making.

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Introduction

The main objective of this book is to present gender and diversity in smart transport as a game changer for urban metropolises around the globe. Despite growing attention to the need to include gender and diversity in innovation of the future transport sector, these perspectives are still a niche in mainstream planning and policy. This book argues that we need more socially inclusive approaches to meet the challenges of climate change, congestion, and urbanization, which are on the political agenda in most countries today. Applying gender and diversity, spelled out in variables such as age, class, ethnicity, and disability, to the field of transport, the book offers an invitation to take a fresh look at mobility planning and policies as well as research in this area. Broad in scope, the book critically explores and assesses how gender and diversity are entangled in the concepts and practices of smart mobility.

This book presents concepts, theories, and cases of gender and diversity as informing the field of smart transport. It provides a new and intriguing framework for studying and interpreting gender and mobility in the twenty-first century. By exploring theoretical underpinnings and using explorative methodologies, the book offers an account of how to critically assemble smart technology, urban planning, sustainability, and justice into a new vision and practice of urban space and mobility.

We present a new and vital notion of *Gender Smart Mobility* as a game-changing direction for the future transport sector. The concept of Gender Smart Mobility expresses a transport system that caters for both environmental and social challenges by providing transport for all. In revealing this concept, the book gives shape to the ways in which new smart mobility technologies and practices can be created as a common good.

A core issue that cuts across all the chapters is whether approaches to smart mobility imply more or less affordability, accessibility, effectivity, sustainability, and attractiveness for all. The volume also rethinks traditional approaches to transport through the social facets of everyday mobility. Who benefits from transport policies and, more importantly, who does not? How do we include the diversity of the population in the planning of transport today, and in the future? Which perspectives, approaches, and actions can help make mobility systems more inclusive

and open to broader constituencies? We introduce concepts of gender and other diversifying social categories, while illustrating how these have come into play in transport both historically and in the present. We offer the reader concrete examples and guidelines on how to work with gender and diversity in various forms of transportation, ranging from shared mobility modes in Europe, early car culture in the United States, and gendered innovation in Asia.

Intersectionality and crossroads – How could things look different?

DeGraffenreid versus General Motors (GM) was an American court case that unfolded at the beginning of the 1970s, when five black women sued the GM in respect of a policy that they argued targeted black women exclusively. Black women were not employed at GM before the Civil Rights Act of 1964, so these women were the last hired and the first fired in the recession in the early 1970s. A policy like GMs' could have fallen under both gender and race discrimination, but the court at the time refused to combine the two. This left black women in a legal gap.

Legal scholar Kimberlé Crenshaw studied the case later, in the 1980s, and contended that the court's narrow view of discrimination was a prime example of what she called the 'conceptual limitations of … single-issue analyses' regarding how the law considered both racism and sexism. In other words, the law seemed to forget that black women are both black *and* female, and are thus subject to discrimination on the basis of race and gender, and often a combination of the two (Crenshaw 1989; Coaston 2019). As part of her study, Crenshaw introduced the concept of intersectionality, which she viewed as having various dimensions. One was structural intersectionality, which implied compound structures of inequalities of, for example, gender, race, and class. Another dimension was political intersectionality, which implied strategies of resistance in social and political institutions and collective actions. In this book, we apply intersectional analysis as a way of analysing how oppression, subordination, and privilege cut across various systems of differentiation (Borchorst & Teigen 2010).

To illustrate her ideas regarding intersectionality, Crenshaw suggested a crossroad as a metaphor for the encounters and entanglements of various categories.

The notion of the crossroad is a guiding principle for this book. The multiple encounters that take place in daily transport can be placed on the crossroads in both a physical and a metaphorical sense. In transport, we encounter both users of transport and means of mobility, which work to inform meanings, presumptions, approaches, and priorities. At the crossroad, we might see an advertisement featuring a white, middle-class businessman in a smart car. We might observe a young man on a shared bike and an elderly woman with her roller. These are simple observations that, at the same time, work to inscribe links between certain forms of transport and certain individuals and their mobility in hegemonies and power relations.

These encounters, which take place every day in a physical, methodological, yet also political sense, have spurred the guiding questions for this book: What are the categories at stake in understanding and approaching a smart transport system?

How many categories should be included? In a metaphorical sense, one can ask: How do the crossroads and its users create unconsciously biased mental images of 'highways, byways and no ways'? The ambition of this book is to offer perspectives of how things could look different.

Acknowledgements

Chapter overview

This book applies *Gender Smart Mobility* as a critical and creative concept with the aim of transforming and widening the scope of policies and practices in the transport sector. The volume can be read from start to finish, but chapters can also be read individually depending on the particular area that the reader is interested in. The chapters include introductions to concepts and methods as well as cases that aim to present and elucidate problems and the potential for a Gender Smart Mobility system.

Chapter 1 addresses the present and future smart mobility solution as a backdrop and context for the book. It shows how smart transport ambitions are closely connected to strategies for smart cities. The chapter discusses how cities worldwide position themselves as 'smart' to meet the demanding challenges of climate change and population growth, while aiming to provide an increasingly diverse urban population with improved mobility solutions. It also demonstrates how current smart transport actions pay little attention to the various social aspects of technological solutions. It remains unclear – in the current technology-driven system – how social factors may be considered or how resources for the inclusion of such aspects will be provided.

Chapter 2 provides further evidence that the social, i.e., gendered and diverse, dimension of daily mobility has been neglected in technological innovation as well as in research and policymaking in respect of smart transport. It departs from a historical view of how the Western car-centric society model became the ideal, which also produced social and gendered inequalities. We discuss how smart cars are seen as the key to reshaping our future mobility by solving societal and environmental challenges. Yes, the smart car discourse is also in danger of reproducing and enhancing such inequalities. Finally, the concept of Gender Smart Mobility is suggested as an approach to smart mobility that goes beyond mainstream policy and practice. The Gender Smart Mobility indicator is presented as five dimensions for attention and reflection: affordability, effectiveness, attractiveness, sustainability, and inclusivity. It also entails a new notion of Gender and Diversity Action Plans (GADAPs) as a method for achieving the political aims of Gender Smart Mobility.

Chapter 3 provides the reader with a deeper understanding of how to work with gender and diversity as analytical categories in transport. The chapter presents concepts of gender and diversity and how they relate to the field of transport, spelling out everyday problems of imbalances in the transport sector including various types of new smart mobility, such as shared mobility modes, particularly bike sharing schemes. The chapter introduces the often-met pitfalls when working with gender, such as beliefs in gender-neutrality. It then introduces perspectives on diversity to further an understanding of how not only gender but other social dimensions play into the population's transport needs and mobility patterns. The chapter looks into how these perspectives are lacking in smart transport solutions, design, and policy. Also, it introduces the analytical concept of gendered scripts that casts light on the social processes which take part of making mobility technologies. Throughout the chapter, existing knowledge of gendered behaviour in everyday mobility

is addressed, showing how transport produces and reproduces gendered structures and inequalities in various regional and national contexts.

Chapter 4 follows on from the previous chapter by expanding the conceptual avenues of gender and diversity and directing the focus to strategies to working with gender and diversity in smart transport. The chapter introduces approaches to recognizing the timely topics of gender and diversity in areas of smart transport. The particular aim of this chapter is to broaden the understanding of these issues: inclusive language, and gender and diversity mainstreaming are outlined.

Chapter 5 provides the basis for and examples of Gender Smart Mobility as translated into gender and diversity mainstreaming in policy and practice. It starts with a couple of examples from municipalities and then turns to a general approach to outline the structure for Gender and Diversity Action Planning (GADAP) and examples of tools which are common and useful in the international context of gender mainstreaming. In the second part of the chapter, a detailed example is presented of setting up and doing gender and diversity planning and how the dimensions of the gender smart indicator can be included in bike sharing schemes.

Chapter 6 directs the focus to the methodological side of approaching Gender Smart Mobility. In this chapter, we demonstrate how methods such as gender and diversity-sensitive surveys and new digital and visual methodologies can connect gender and diversity to transport and mobility. We identify gaps in current transport methods and present new ways of providing data for research, policy, and planning with evidence-based knowledge on the various gendered and diverse transport user needs. The chapter reflects on the growing hegemony of evidence-based research and strategies in twenty-first-century policymaking, which has turned statistics and quantitative methodologies into key data with wide-ranging effects at both institutional and individual levels. As a result, knowing how to find, collect, analyse, and communicate data is of increasing importance in transport analysis. The chapter presents examples and guidelines for surveys as well as visual analysis of online representations and marketing, suggesting that such methods can help to address the pressing issue of inequality in future smart transport systems.

Chapter 7 addresses the entanglement of gendered and other social categories in transport policymaking and employment. It deals with the general relevance of a broad representation of gender and diversity in these fields. We argue that political and transport institutions tend to have particular bound effects over time, caused by reinforcing certain masculine rules and norms of behaviour. It demonstrates the gendered aspects of institutional path dependency and suggests that male dominance in the field acts as an impediment to innovation and sustainable change in the car-centric mobility system. Transport as a labour market is closely related to the path dependencies and illustrates the unequal gender representation in the sector, which might also influence inadequate solutions. Finally, we shed light on the practices of female entrepreneurs and the smart transport sector as a potential avenue for opening new doors to climate-friendly transport policies and products for all.

Chapter 8 points to the future, addressing openings and opportunities for a Gender Smart Mobility system, including transport challenges related to the Covid-19 pandemic. It examines the pandemic as an example of crisis and discusses its

impact on transport. In particular, it looks at how recommendations and guidelines following the pandemic have greatly impacted commuting and public transport service provision across the world. Public transport is one of the sectors that was severely hit by the Covid-19 pandemic. The chapter takes up the challenges of the pandemic and smart transport, raising new questions about the social aspects of these changes. While women make up the majority of public transport passengers, knowledge on the gendered effects of the pandemic crisis is still scarce and fragmented. The chapter discusses the need to identify knowledge gaps and advance research and political awareness at local, regional, and cross-national levels. Findings from gender and diversity surveys and guidelines for a Gender Smart data collection are presented.

The final epilogue returns to the idea of Gender Smart Mobility as a vital pillar of smart cities and as a key component of climate-friendly transport policy. It is argued that passenger transport systems represent the main backbone of society and have a crucial role to play in assuring any country's well-being and economic functioning. Further conclusions are drawn on how spatial planning, transport, and mobility shape new challenges and new modes of (in)equalities for various groups today as well as the lessons learned for future transport – which should equally be both sustainable and climate friendly.

Glossary

Gender   Gender is a social category that refers to the cultural meaning-making of people as either male or female. Gender refers to social roles associated with being male and female as well as the relation between women and men, girls and boys. Historically, the dominant understanding of gender has been binary: one is either female or male. In addition, there is an idea of these two genders being opposites of one another. Soft/hard, passive/active, caring/uncaring are some of the dichotomies that are associated with femininity and masculinity. The social element of the category of gender emphasizes how gender roles, opportunities, and relationships are socially constructed and learned through processes of socialization. This also means that they are context- and time-specific and might change accordingly.

Smart   In Smart Mobility, 'smart' has two etymological meanings. One is associated with knowledge and the other with speed. In this book, we follow an argument in favour of a knowledge-based approach. In so doing, we explore what gender-sensitive knowledge can offer the smart city discourse and smart technologies. The knowledge-based approach also means that technology becomes a potential enabler and assistant to Smart Thinking and the making of mobility for all (McFarlane & Söderström 2017).

Mobility   Mobility is the ability to freely move or be moved, while transport(ation) is the act of moving goods or people. The important difference here is the word 'ability'. Transportation ('across-carry' in Latin) describes the act of moving something or someone, whereas mobility ('capable of movement')

describes the *ability* of a person to move or be moved. In other words, transportation is something you do and mobility is something you have when you are able to move by transport mode or by your own body. Yet, one has no mobility if there is no transportation that caters for you. In this way, transportation and mobility are two sides of one coin and both terms need to be considered interrelated (McKay 2019).

Intersectionality   The term 'intersectionality' is derived from the Anglo-American term for a road crossing or junction. The term has gained a lot of ground since the 1990s and is used to describe intersections between gender/sex and other socio-cultural processes related to categories such as age, ethnicity, locality, and sexuality. In this book, intersectionality is mainly used from an analytical perspective to describe overlapping or intersecting forms of discrimination related to gender, sex, ethnicity, age, socio-economic status, sexuality, geographic location, disabilities, and so on. The type and number of categories are not fixed but may be determined and studied in various empirical contexts and analyses (Lykke 2010; http://genderedinnovations.stanford.edu/terms/intersectionality.html, accessed 15.3.2022)

Discrimination   It is increasingly recognized that discrimination can occur on the basis of more than one ground. A person who is discriminated against on the ground of her race might also suffer discrimination on the grounds of her gender, her sexual orientation, her religion or belief, her age, or her disability. Such discrimination can create cumulative disadvantages. Thus, ethnic minority women, older women, black women, and disabled women are among the most disadvantaged groups in many EU Member States. (https://op.europa.eu/en/publication-detail/-/publication/d73a9221-b7c3-40f6-8414-8a48a2157a)

Diversity   In broad terms, diversity is any dimension that can be used to differentiate groups and people from one another. In this book, it implies respect for and appreciation of difference. Diversity encompasses the range of similarities and differences each individual brings to the workplace, and to society in general, including, but not limited to, national origin, language, race, colour, disability, ethnicity, gender, age, religion, sexual orientation, gender identity, socio-economic status, veteran status, and family structure. We define workforce diversity as a collection of individual attributes that together help us pursue organizational objectives efficiently and effectively. *In simple terms, diversity is a mix.* [*US Department of Ho*using *and Urban Development. (Diversity and Inclusion Definitions | HUD.gov/U.S. Department of Housing and Urban Development (HUD)*]

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1 Gender Smart Mobility as a Pillar of Smart City Developments

Smart mobility and smart cities – The promises and challenges

How did 'smart mobility' and 'smart cities' become buzzwords in global, regional, and local developments in the twenty-first century? The short answer is that cities around the world are currently facing challenges, such as growing population, while being fuelled by economic growth ambitions and environmental concerns. For many cities, the response to these challenges has been to define themselves as 'smart', which also means they have entered into a global competition with respect to growth and innovative solutions (Lyons 2018).

These trends are also evident in current political and strategic visions: the term 'smart' entered the 2021 European transport programme with the title *Sustainable and Smart Mobility Strategy.* Here, the word smart is linked with mobility and sustainability. Frans Timmermans, Executive Vice-President for the European Green Deal, foresaw a bright future with the arrival of smart transport that will ensure change right across the transport system, in saying 'Today's strategy will shift the way people and goods move across Europe and make it easy to combine different modes of transport in a single journey. We've set ambitious targets for the entire transport system to ensure a sustainable, smart, and resilient return from the COVID-19 crisis'.[1]

As we will see in the following chapters, there has been little or no focus on social and gender equality, which means that technological solutions have taken centre stage. Our aim is to redress these gaps and imbalances and to present a broad vision for Gender Smart Mobility as a pillar of the smart city.

As demonstrated, the notion of the smart city and its various transport challenges has become a mantra in present-day urban developments. The claim is that no city can aspire to play a leading local or global if its mobility system is not smart (Albino et al. 2015; Marsden & Reardon 2017). Many cities around the world are now aiming to provide a more diverse and sprawling city population with better and smarter mobility solutions. Smartness not only connects to population growth, but also to the fact that the composition of a city's residents, not least in Europe, has become more diverse in terms of gender, ethnicity, age, disability, and class. Rapid urbanization – nicknamed 'urban metabolism' – has made the movement of people and urban mobility a necessity for growth-oriented governments. This is a

trend that is built on a perspective filled with a cascade of images of 'the future of smart mobility' as harmonious and seamless – far from current realities. This is also where autonomous and electrified motorized mobility takes centre stage, which can leave the imagination of other more sustainable and social innovations behind.

Box 1.1 Future vision of self-driving cars in the European Union

Vision of self-driving cars in the European Union. Calm and seamless and far from current urban realities. Source: European Parliament. See https://www.europarl.europa.eu/news/en/headlines/economy/20190110STO23102/self-driving-cars-in-the-eu-from-science-fiction-to-reality (accessed on 12 June 2021)

In this chapter, we offer a critical context and some ideas about how gender and diversity can be viewed as a pillar of smart cities and smart mobility. We depart from the notion that mobility is a key element in the creation of well-functioning societies. While transport is an asset at both individual and societal levels, it also poses serious environmental problems as well as challenges in meeting the mobility needs of the whole population. Smart mobility is said to hold the solution to some of these problems by being less polluting and by reducing traffic congestion, noise, and travel costs as well as increasing safety and transfer speed. We believe that digital solutions and the use of new technologies are not necessarily 'smart', and that 'smartness' depends on whether these solutions actually benefit people. As people are different, this diversity must be reflected in the smartening of transport, so we show how to connect gender equality and diversity to the smart mobility paradigm.

Box 1.2 Smart cities and mobility

Smart cities are by and large defined by their mobility, which links city development closely to the planning of new and smart transportation. Notwithstanding various elusive ideas about smart cities, it is a fact that cities are experiencing demographic changes and a vast growth in city populations: worldwide from 54% in 2014 to an estimated 68% in 2050, when it is forecast that 6–7 billion people will be living in cities all around the globe. Such a prognosis confronts cities with new and pressing challenges and has made mobility transformation, along with housing, an urgent issue (Fonzone et al. 2018). This steep rise in mobility needs reflects rapid urbanization in the twenty-first century. It is now estimated that by 2050, there may be three to four times as many passenger kilometres travelled as in the year 2000, and during the same period, freight movement could also rise more than threefold (UN-Habitat n.d.).

Smart city and mobility as travelling concepts

The close alignment of technology with the smart city dates back to the 1990s, when the focus was on the significance of new technology, ICT and its application in urban infrastructure. For example, the California Institute for Smart Communities was among the first to focus on how communities could become smart and how a city could be designed to implement information technologies (Albino et al. 2015: 3). Eventually, the term 'smart city' became a travelling concept which outcompeted and marginalized other prevalent terms such as the 'intelligent', 'digital', or 'ubiquitous' city. From a marketing perspective, 'smartness' was used as a more user-friendly and catchy term – compared with more elitist ones like 'intelligent'. The smart label then diffused at the turn of the millennium as an 'urban labelling' phenomenon which carries a host of meanings by now in the 2020s.

The idea of the smart city was furthermore invented as a solution to multiple urban problems and initially it addressed a variety of escalating problems such as traffic congestion, inefficient services, and economic stagnation. The idea notably proliferated and became a solution to the financial crisis in 2008. Today, the smart city is identified with hegemonic and seductive yet contrasting aspirations of prosperity and growth on the one hand, and the promotion of healthy lifestyles for all on the other. Critical scholars such as Robert Holland claim the smart city 'symbolises a new kind of technology–led urban utopia glossing over all the contestations and contrasting views' (Townsend 2013; Hollands 2014: 61).

The term 'smart' carries affinities to technology as well as to advanced mindsets. The word has a twofold meaning that allows for critical reflections that (a) are knowledge related – smart as something sharp, stinging, or cutting; and (b) describe the properties of an object – speed, intelligence, and neatness (McFarlane & Söderström 2017). The smart word 'history' invites recognition of the smart brain and of knowledge as a leading guide when it comes to new initiatives and strategies. It invites not only to ask questions of how, but also for whom new mobility technologies are developed for.

Various agents, among them the consultancies that are engaged in carving out future directions, have pointed to the need to include more human agency in the smart city discourse. One example is a McKinsey report from 2018, which stressed that becoming a smart city is not a goal but a means to an end: the 'entire point is to respond more effectively and dynamically to the needs and desires of residents'. Smart cities, it states, 'need to focus on improving outcomes for residents and listing their active participation in shaping the places they call home' (McKinsey 2018 Executive Summary).

General literature reviews of smart cities and their priorities however show that social dimensions are still the least explored. For example, there is a lack of explanation of how 'liveability' is defined and what is included in 'quality of life'. As Toli et al. note, quality of life has many different meanings in different parts of the world – for example, in terms of access to food, water, and medicine as well as prevailing ideas of democracy and opportunity (Albino et al. 2015; Toli

& Murtagh 2020). Meanwhile rhetoric and hopeful aspirations do of course not provide the full picture. Cities and countries around the world have followed the imperative of smart city alignments in their various practices. The very term has become a powerful and performative one, providing not only new affordances, but also legitimating the enforcement of poor urban developments. China is as an extreme example of a county that has implemented excessive and centralized urbanization and promoted car-centric mobility. Although they have similarities, more scattered developments and projects have been implemented in many North American and European cities. All over the world one can find new masterplans and grand visions of urban futures; and new development plans often include land grabbing and the destruction of green and recreational spaces within new commercial developments as well as old sections of towns, which diminishes urban liveability.

In general terms, the smart city and smart mobility discourses have become part of ongoing conceptual and practical dynamics, and this also creates a thriving field of contrasting views and ongoing negotiations.[2] As we demonstrate in the following sections, we intend to join forces with other critical social scientists and contribute to a new take on the definition of a smart city. Away from the fixation on technology, the pure profit interests of big business, and the associated weakness of public services and disempowerment of citizens.

Smart city and mobility – Contrasting views

In many locations, smart city plans and practices have created a wave of gentrification, where smart city provisions, ranging from housing to smart metro systems and shared cars and bikes, have mainly served the middle classes (Priya Uteng et al. 2019; Lenz 2020). New mobility provisions have been clearly gendered, with shared cars and bikes mainly meeting the interests and needs of well-educated young males located in city centres. Both the elderly and women are reported to be both less frequent users of the new services and also less inclined to smart vehicle innovations. These groups have become dependent on a public transport system that increasingly relies on digital solutions and smart phones, which are not available or affordable to all (Cavoli et al. 2017). Chinese scholars, for instance, have addressed this issue and discuss the new commuter burden, which disproportionately affects women who do not drive and are unable to use the new metro lines that primarily serve new middle-class areas. These women are depending on slow busses or private solutions such as electric scooters and the like (see Figure 1.1). At present, the horizons and proposed key actions by politicians and companies pay insufficient attention to various aspects of technology and their impact on meeting everyone's mobility needs. Technology is regarded as the main driver for smart solutions, but it remains unclear how human and social factors will be considered or how resources will be provided. As we will see in the following chapters, the 'mobility for all' jargon and its proclaimed nurturing of human factors and quality of life have so far appeared as window dressing, obscuring what could be called the 'technological fix' in connected and
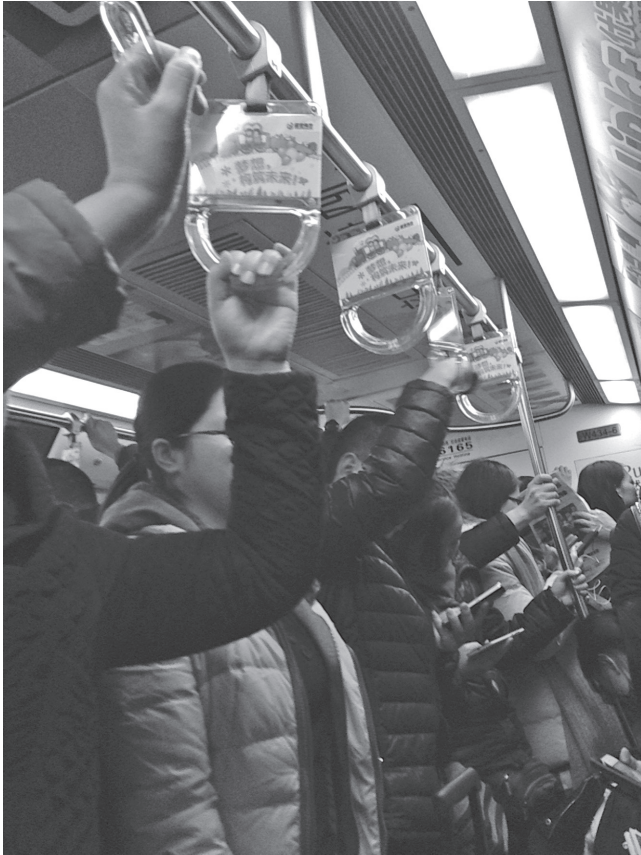
Figure 1.1 The new commuter burden in Beijing 2019.

Source: Hilda Rømer Christensen (photo).

automated activities. The term technological fix implies the belief that new and smarter technology can fix the problems of urban mobility without a change in human behaviour.

Box 1.3   Cycling at the forefront of the smart city?

Cycling, which for decades has been overlooked by city planners, is now returning to the forefront of city plans and priorities. The smart city, in this sense, may have the potential to challenge the hegemony of cars. Yet, one also needs to consider the implications and who the new biking infrastructure and shared bike schemes cater for, in reality. How can the smart city spark the revival of the bike and biking as a sustainable and realistic mode of transport also for parents with children (see Figure 1.2).

Figure 1.2 Shared bikes as a smart but risky solution (Beijing 2019).

Source: Hilda Rømer Christensen (photo).

Gender Smart Mobility as a pillar of smart city discourse

A point of departure for this book has been the TInnGO project, funded by the European Horizon 2020 programme, which addressed how gender is interwoven in smart city and smart mobility discourses and practices. The emphasis was on how to broaden and offer new ways into inclusive smart mobility, sustainability, and climate-friendly solutions.

The project hosted ten TInnGO hubs which addressed local environments from different perspectives and local needs. The TInnGO hubs also came up with tailored solutions that challenged the 'one-size-fits-all approach', a perspective we will elucidate in various ways in the following chapters.

The TInnGO project and case studies, as well as the local hubs that were established, provided an illustration of Toli and Murtagh's (2020: 8) definition of the smart city as a 'concept of urban transformation that should aim to achieve a higher quality of life that offers opportunities for economic growth for all of its citizens, but with respect to the particularities of each locality and its existing inhabitants'.

This book applies some of the european visions to a broader regional and global field. We depart from the experiences and findings of the TInnGO project to offer extended educational and research strategic guidelines on how to achieve the perspectives and aims of Gender Smart Mobility at different levels. The concept will be presented more thoroughly at the end of Chapter 2. We end this chapter with the TInnGO Gender Smart Mobility Charter because it summarizes the main aims and ambitions of the project as well as this book.

**Box 1.4   The TInnGO Gender Smart Mobility Charter –
Creating proximity to institutions and policymakers**

WHAT. The TInnGO Gender Smart Mobility Charter is a document that derives from the TInnGO project on Gender Smart Mobility and addresses pressing challenges in the formation of new and sustainable mobilities for all in European cities and regions. The document commits the signing institutions to launching concrete initiatives in policymaking, research, and data collection, as well as mobilizing practices at local, national, and European levels. It also positions the TInnGO observatory as a main channel of cooperation and source of knowledge advocacy in this field.

WHY. The TInnGO Gender Smart Mobility Charter challenges the longstanding ideas of gender neutrality and male bias in the transport sector and maintains the focus of the TInnGO project and its achievements. The TInnGO Gender Smart Mobility Charter will keep its focus on the enduring gaps, structural inequalities, and insufficient planning and services in European transport and mobility – challenges that cannot be solved by smart technology alone, but only through broad mobilization and a change of policy, planning, and practices.

HOW. The TInnGO Gender Smart Mobility Charter commits the signing institutions to following the principles of Gender Smart Mobility and to work on Gender and Diversity Action Plans (GADAPs) at relevant levels. Gender Smart Mobility promotes *Affordable, Effective, Attractive, Sustainable, and Inclusive* transport and mobility provisions and principles. GADAP will provide a socially sustainable transport system. It is a development of traditional Gender Action Planning (GAP) and the practical translation of Gender Smart Mobility and is a flexible model and guideline that can be applied in multiple sites to produce

- new forms and methods of data collection and knowledge
- new designs guided by gender and diversity
- new ways of governance and consciousness raising.

Summary

While being critical of and attentive to new and emerging developments in smart mobility discourses and practices, the aim of this book is not to produce a radical critique of the smart city and smart mobility concepts, denying their utility a priori. The aim is rather to connect and contrast the notion of the smart city with the use of the innovative concept of Gender Smart Mobility and to galvanize it as a pillar of smart city discourse and practice.[3]

In the following chapters, we will present examples and methods, many of which were developed in the TInnGO project and summarized in the policy briefs. Gender

Smart Mobility was applied as a key concept and guided the conduct of Gender and Diversity Action Plans (GADAPs) in the 11 TInnGO hubs. Read more here: https://transportgenderobservatory.eu/resources/gender-diversity-action-plans/

Notes

1 Briefing. EPRS ideas paper. Thinking about future EU policy. WPRS. European parliamentary research service (Jean Soone. PE 652.059. September 2020) https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/652027/EPRS_BRI(2020)652027_EN.pdf. See also EUR-Lex (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0789) as well as SRIA (https://www.ccam.eu/wp-content/uploads/2021/12/CCAM-Partnership-SRIA-v1.4_FINAL_VER_-ELECTRONIC-17032022.pdf).
2 No less than 43 smart city definitions were found in recent literature (Hollands 2008; Vanolo 2013; McFarlane & Söderström 2017). The multiple definitions also form dynamics aimed at widening, displacing, and twisting the meaning of 'smart city' and associated practices.
3 A Scopus screening of keywords in May 2021 revealed a very week alignment: using keywords such as gender and smart cities yielded a total of 18 articles, while keywords such as gender and urban development yielded 129 articles.

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2 Gender, Mobility and Technology

Historical and Current Perspectives

Mobility is considered a key element in the creation of well-functioning socie-ties. Yet, while transport is an asset at individual and societal levels, it is also re-sponsible for a range of serious environmental, health, and sustainability related problems. This chapter addresses both historical and current perspectives on mo-bility and technology. How are new directions of smart transport carved out and who benefits from these new visions? We depart from the historical perspective of car culture and present and elaborate the concept of Gender Smart Mobility as a notion which promotes inclusive transport systems that go beyond the dominant and narrow ideas of transport as serving economic growth and traditional full-time employment.

One cannot write about transport and mobility without addressing the dominant car culture. But how did it come to be that metropolitan areas and big cities around the world today have been transformed into 'car cities'? Was this promoted by local and national car and road lobbies? Or was it a move enabled by urban and traffic planners or masculine elites? Or is it a result of citizens all over the world longing for private cars and all the related benefits of speed, modernity, comfort, and so on? (Emanuel 2012).[1] In this chapter, we focus on how historical and current developments can be assessed using gender, sustainability, and change as a lens for analysis and interpretation.

Many of the ideas – and ideals – of transport and mobility are closely con-nected with the cradle of modern mobility and gender ideologies in the nineteenth century. The car became the iconic mobility and a signature commodity form of the twentieth century. Cars and car culture have in many ways been at the heart of our understandings of the modern world, and to be mobile and motorized has been considered to be modern (Ross 1996: 17). Not only did the car industry in many Western countries, such as the United States, UK, France, and Germany, become one of the most important drivers of national economic growth, but cars and their use also became closely linked to certain gendered constructions that associated men and masculinity to cars in very formative ways.

The United States has been called 'the land of the car' and in many ways the car industry became a paradigm for gender dynamics at the turn of the twentieth century. Together with the new car paradigm, the white, male engineer came of age and was rendered a hegemonic figure in Western technology and innovation. The

late nineteenth century was a time when mechanical and civil engineering increasingly came to define technology – and, during this formation, the artefacts and forms of knowledge associated with women were marginalized and downgraded. Engineers became an elite with exclusive rights to technical expertise and car production involved the creation of a male professional identity, which included educational qualifications and managerial positions that were distinguished from shop floor engineers and blue-collar workers. This also involved an ideal of masculinity marked by physical ability and individual career goals (Oldenziel 1999; Mellström 2002; Wajcman 2010).

During the same process, femininity was reset as being incompatible with the technological project (Mellström 2002). For example, the car company Ford and Fordism as a large-scale mass production system worked on cars and car production along strictly gendered codes and gendered divisions of work from the outset. In 1914, Ford became famous when the company introduced the five-dollar day; it was meant as a family wage and was only available to (married) men and single women. By the same stroke, Ford's adoption of a family wage reinforced the notion that women should remain on low wages or stay at home (May 1982: 275).

The term 'technology' became intertwined with modernity and masculinity, a meaning that still holds true in many areas related to transport and mobility; both in engineering and in many transport-related areas, such as policy and employment, and innovation, women are still a minority today. These early developments established a set of norms which are still active as an unconscious bias in the field of gender, transport, and mobility. The prevalent discourses consist of a set of interrelated and enduring values and ideas that inform political, economic, and cultural preferences and priorities across cultures and regions. Most of these priorities and policies still support male drivers and favour motorized mobility rather than alternative modes of transport such as public transport, biking, and walking, which would serve broader groups of users as well as sustainable visions.

It has, however, been claimed that the prevailing juxtaposition of bikes and cars is not quite correct, and that there seems to have been a greater similarity between bikes and cars than is presumed. Paul Rosen (2002) argues that the bike had a much bigger influence on the development of modernity than is often recognized. The bike stimulated the desire for personal transportation and speed, and for a long time, bikes provided a private alternative to public transportation in the twentieth century. The bike also became an emancipatory vehicle for women. As said by Susan B. Anthony, a well-known American suffragist, 'I rejoice every time I see a woman ride by on a wheel. It gives her a feeling of self-reliance and independence the moment she takes her seat; and away she goes, the picture of untrammelled womanhood' (Anthony 1896).

Biking women became objects of fascination and interest in both the East and the West around the turn of the last century, when cars had not yet come of age. The bike not only provided women with the possibility of individual mobility – it also required a fit body. Biking initiated, as illustrated in Figure 2.1, a new dress code for middle-class women, a reform dress that was practical and weatherproof, and which, most importantly, did not impede movement.

Figure 2.1 German women sports cyclists around 1898. Gertrude Rodda and Frieda Rinne.
Source: Die Radlerin, journal /SLUB Dresden. https://digital.slub-dresden.de/werkansicht/dlf/402481/5

Gender in transport and car culture – Pitfalls and potentials

When discussing gender in transport research, there is a general tendency to conflate women with gender and argue that gender-sensitive research should focus on women's specific needs and practices relating to domestic responsibility and family obligations (de Madariaga 2013). While such an approach might have certain benefits, it is also in danger of treating and reproducing women as the 'other' in transport. Besides, it leaves the practices and preferences of men and associated ideas of masculinity as unproblematized and taken for granted. When it comes to cars, recent studies have provided findings that show the specific links between men and cars; that cars have been co-producers of gender and that they have reinforced the symbolic link among men, masculinity, and machines (Landström 2006; Balkmar 2012). This symbolic link among men, masculinity, and cars has been seen as a cultural phenomenon that is continuously (re)produced in varied ways in cultural meaning-making and as such also produces enduring inequalities between men and women.

Cars were, as noted, invented during a period that was paralleled by the idea of gender as being fixed to biology and nature – assumptions that were propagated by

the new natural and social sciences and which also spurred a cult of domesticity carried out by women.[2] The coming of modern industrial and urban society implied a split between the private and public spheres, meaning that the workplace, in many cases, moved away from the home. The ideal man became a breadwinner who worked outside the home. From this perspective, the making of modern transportation galvanized the new gender roles and social conventions, from the use of cars to the whole transport sector. Women were barred not only from owning and driving a car, but also from being employed in the public transport sector, such as rail and bus services. As we will show in the following chapters, things have only recently started to change.

Car driving became associated with speed and freedom, which were – and are – meanings that are more closely connected with masculine than feminine norms. The automobile, however, also became an icon of independence and mobility for some middle-class women, most notably in the United States, where suffragist mobilization took off in parallel with the new car culture. In 1916, Nell Richardson and Alice Burke left New York in their Golden Flier – a suffrage yellow Saxon automobile decorated with flowers and 'Votes for Women' banners – bound for San Francisco in an effort to drum up support for the suffragist cause. Female drivers were seen as a novelty at the beginning of the twentieth century; they provided an element of sensationalism in stories about women who were capable of handling heavy, petrol-powered automobiles. Female drivers challenged the notion that women ought to remain sequestered in the home.[3]

Overall, the new technology of the car contributed to the consolidation of a conservative gender culture at the beginning of the twentieth century. With a few illuminating exceptions, women were by and large excluded from the sphere of the car – not only as drivers, but also from car design and production as well as from transport as a labour market. The same was true for transport planning and policy-making, which we will discuss in the following chapters.

Cars, however, are not only connected to the social landscape and cultural imaginary that has now been a reality for over a century; the car-centric society is also closely tied to ideas of growth and economy.[4] The car industry has been a growth engine for Europe and other parts of the world, not least in the leading car-producing economies. Amid pressure from new car manufacturers in both the East and the West, Europe regards itself as a leading player in the global race towards automated transport, in slogans like 'Europe take the Lead' which is supported by huge investments in the sector: 54 billion Euros in 2017 alone, which was forecast to rise to 250 billion Euros by 2020 (ERTRAC 2019).[5] The sector has a manufacturing output of close to 20 million vehicles and a contribution to European GDP of 6.8%, with estimated employment of 13 million people. Europe is currently struggling to uphold its leading role in car production, especially in the face of upcoming Chinese car producers. As the director of the influential European Road Transport Research Advisory Council (ERTRAC) stated, 'the road to automated mobility represents a key opportunity for Europe to retain its leadership and pave the way for a new mobility landscape for all of its citizens' (ERTRAC 2019: 4). According to ERTRAC, automated driving innovation is motivated by both technological

advancements and social goals: automated driving is endorsed as 'one of the key technologies and major technological advancements influencing and shaping our future mobility and equality of life' (ERTRAC 2019: 4).

The question is whether the race for innovation of automatic cars is the solution to the challenges that cities face from congestion, pollution, and limited space. So far it seems that the focus is first and foremost on the development of automated cars for individual use, while public transport and bike technologies are receiving less attention and fewer resources. Just who will have access to the smart mobility services and the smart automated cars is a question that is, in general, being neglected. In the words and images promoted by the tech companies, women, children, and elderly people tend to be relegated to the passenger seat if they are not omitted completely from the picture. They are implicitly referred to as 'unprotected' road users in smart terminology; these consist of pedestrians, cyclists, and powered two-wheeler riders who need protection because they are increasingly involved in accidents that cause severe injuries (ERTRAC 2019: 14). Also studies in this emerging field have demonstrated that gendered inequalities in relation to class, age, and race are being reproduced in the emerging smart and connected systems (Manderscheid 2018; Hildebrand & Scheller 2018).

In the twenty-first century, visions of smart mobility are mainly led by manufacturers who promote an optimistic vision of a society in which technological advances will deliver a 'benign mobility system that all users can access seamlessly and on demand' (Marsden & Reardon 2017: 116). Smart cars are envisioned as a solution that can avoid many of the evils of today's conditions. According to such optimistic views, smart mobility will bring massive gains in safety, cost reduction, and infrastructures, and vehicles will be used more efficiently. Smart mobility solutions are also predicted to bring much greater consumer choice due to shared ownership, data aggregation, and peer-to-peer mobility, which reduces the grip of large providers (Viechnicki et al. 2015).

Box 2.1   The future of autonomous cars

The future of autonomous travel is often depicted in romanticized localities as a contrast to current urban realities. While car companies seek to further more sustainable models and address potential consumers, they continue to promote a car-centric practice as a signpost for modern society and smart, middle-class mobility. See, e.g., Volvo Cars. 2018. 360c: The Future of Autonomous Travel. Available online: https://www.youtube.com/watch?v=apOXDUCYGRw (accessed on 18 June 2021 and Christensen et al. 2022).

Gendered meanings that characterize the traditional automotive industry and transportation sector as a whole may be reproduced and catapulted into the new smart sector. Critical studies already show that the take-up of smart mobility

reveals glaring gaps when it comes to gender affordances and practices in the smart mobility culture. It is demonstrated that the majority of regular users of new smart solutions, such as shared cars and bikes, consist of a rather exclusive group of mainly middle-class men (Lenz 2020). Women who have family responsibilities or who need to navigate a more complicated pattern of transport are, to a larger degree, being referred to cheaper commuter travel alternatives. These groups have not been able to use the more convenient, but also more expensive ride sourcing or bike sharing services. There seem to be a continuity when it comes to historical patterns and gaps that become transposed and even proliferated in the smart mobility era, notably in shared mobility provisions (Singh 2017; Uteng et al. 2019; Christensen 2020). Various studies show enduring gender differences and discrimination in all kinds of daily mobility, in policy and employment, and in cultural assumptions, on which we will shed light in the following chapters.

Ignorance regarding the human aspects of transport and mobility was demonstrated at several of the conferences we attended during the preparation of this book. At one of the major conferences in Brussels in April 2019, organized by the Connected Automated Driving initiative and commissioned by the EU, human aspects remained a kind of black box throughout the programme and the presentations. (Eucad 2019 – Connected Automated Driving Europe). Humans were generally referred to as gender-neutral with terms such as 'drivers', 'passengers', 'the elderly', and 'the impaired'. None of these groups were addressed in specific social terms or as people who would lose out or otherwise be affected by the new technologies and services. This echoes the sceptical forecasts of the age of automated cars which predict a reinforcement of the prevailing 'system of automobility', including the evils of waste, pollution, and environmental degradation (Docherty et al. 2018; Freudendal-Pedersen et al. 2019). As demonstrated at many levels, the current race to develop connected and automated cars seems to neglect human differences, social equality, and gender.

Gender Smart Mobility – A new vision

In the field of feminist transport research, new trends are underway addressing the diversity of users in terms of equal access and transport justice as well as methodological challenges in transport studies. For example, Caren Lévy, a UK transport researcher, has appealed for broader and more complex ideas of transport with regard to social identities and for what she calls the 'deep integration' of social identities in all areas of transport (Levy 2013). The social identities of transport 'users', she argues, are deeply imbedded in social relations and urban practices, ranging from the everyday lives of people to urban policies and planning. Even in studies of the multiple identities of urban residents, such categories are often considered to be at the margins, as the 'social and distributional' aspects of transport. Transport, Levy contends, is not an isolated and delimited field, but one which has critical implications for how diverse citizens, men and women, girls and boys, young and old, are able to exercise and use 'travel choices' both as individuals and collectively.
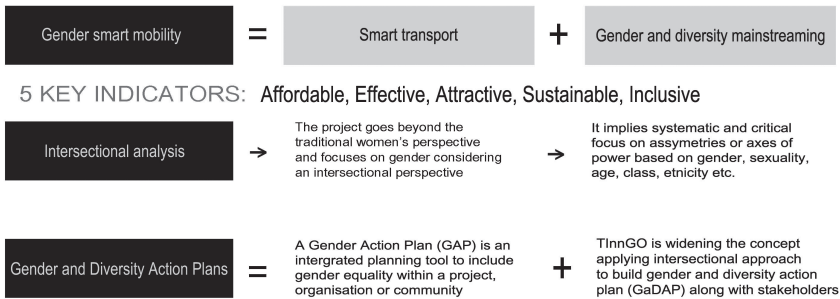
Figure 2.2 Key concepts of Gender Smart Mobility.

Source: TinnGO.

Gender Smart Mobility as demonstrated in Figures 2.2. and 2.3 introduces a broader and more sustainable outlook that cuts across modalities and includes multiple agents. The idea of Gender Smart Mobility embraces a new and composite indicator which includes the following dimensions of transport and mobility for all: (a) inclusive transportation; (b) affordable transportation; (c) effective transportation; (d) attractive transportation; and (e) sustainable transportation. These notions of Gender Smart Mobility, as well as the holistic composite indicator, will guide and be elaborated in the following chapters.

The notion of Gender Smart Mobility was developed within the scope of the Horizon 2020 TInnGO project as a critical and innovative concept and as a guideline for local TInnGO HUB programmes and case studies. Gender Smart Mobility echoes various agendas and strategies. At a general level, it connects to the current
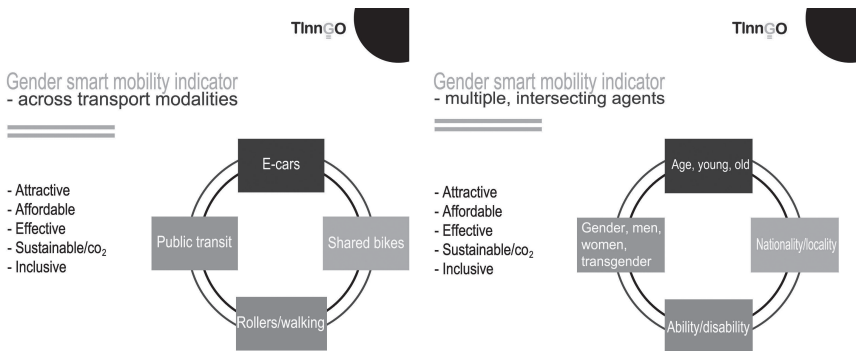
Figure 2.3 Gender Smart Mobility indicator with five dimensions.

Source: TinnGO.

UN Sustainable Development Goals, which link city developments with gender and social equality and also address sustainable cities and communities in the current climate crisis. The UN's attention to social dimensions of sustainable development evolved from the 1987 Brundtland definition of sustainable development as '[d]evelopment that meets the needs for the present without compromising the ability of future generations to meet their own needs'. The later development of the idea has differentiated the notion into several areas of focus: such as economic development, social inclusion, and environmental sustainability.[6]

Gender Smart Mobility enables stakeholders, including scholars, students, and planners, to address smart mobility in new ways that go beyond the dominant notions of economy, growth, and technology. It reflects the role of transport in the twenty-first century which has become more all encompassing. Gender Smart Mobility, as we will demonstrate, is a visionary, yet complicated and multifaceted concept to work with in research, and a demanding one to translate into practice.

Conceptually, Gender Smart Mobility is linked to various theoretical, methodological, and strategic notions. First, Gender Smart Mobility is a composite concept intertwining 'smart' with gender and diversity mainstreaming, which have been longstanding goals of gender policies at the European level; this is developed comprehensively in Chapters 4 and 5.

Second, Gender Smart Mobility requires an intersectional perspective and the inclusion of multiple agents so that gender is seen in context across different systems of differentiation such as locality, age, ethnicity, sexuality, and other potential dimensions. This will be developed in Chapters 3 and 4.

Third, Gender Smart Mobility includes reflections within and across various mobility modalities, both motorized and non-motorized modes such as cars, public transport, cycling, and walking. This perspective will be elucidated throughout this book.

Fourth, Gender Smart Mobility implies a new notion of a Gender and Diversity Action Plan (GADAP), which can be applied as a strategic concept in smart city policy and mobility schemes. We will demonstrate in Chapter 5 how GADAPs present an operationalization of Gender Smart Mobility and a method for achieving the political aims of intersectional analysis. Such plans have the potential to create new avenues of mobility for all, encompassing gender, age, disabilities, and class.

Gender Smart Mobility – An indicator with five dimensions

Indicators and performance measures have been vital to the development of both sustainable transport and gender equality in general. The Gender Smart indicator developed in the TInnGO project brings the two fields of transport and gender equality together and allows for new synergies and intersections between them. It opens a policy window for Gender Smart Mobility to be fully integrated into future gender equality and transport strategies.

Indicators of how to measure and assess gender smart transport are also essential for policy priorities and the planning of future goals and interventions. The TInnGO indicator for Gender Smart Mobility is intended to fill the gap in

the field of gender equality in transport and mobility, where recognized indicators are still few and far between at the global level, and completely lacking at the European level.

In addition, indicators have become imperative for current policymaking and can assume different forms and serve various functions. Indicators are generally divided into: (a) descriptive indicators that are relevant for systems and disseminate knowledge or draw attention to a problem or gap; and (b) normative indicators, which include a strategic goal or a critical limit value (Gudmundsson & Sørensen 2013).

Gender Smart Mobility

The Gender Smart Mobility indicator is an explorative indicator which consists of the five dimensions presented below[7] and cuts across existing categorizations of types and roles of indicators. It is also a composite indicator which is formed when individual indicators are compiled into a single index, or other forms of measures, on the basis of an underlying model of the multi-dimensional concept that is being measured. A composite indicator measures multi-dimensional concepts (translated into affordability, access, sustainability, attractiveness, and inclusion), which cannot be captured by a single indicator.[8]

The Gender Smart Mobility indicator's five dimensions are as follows:

Inclusive transportation: Smart transport systems should address various groups of citizens (men, women, gender-neutral, old, young, child, ethnic) in non-stereotypical ways from beginning to end. This includes both technical and non-technical issues, from the inception of ideas to the end-products. It means that various groups must be included in processes of design, accessibility, safety, communication and marketing, living labs, and end-products.

Affordable transportation: Public and public private investments should address robust and stable public transport provisions. For example, investments should support the innovation of small smart cars for all rather than luxury cars for the few, keeping in mind the gender pay gap and that women in general have fewer resources than men.

Effective transportation: Seamless transport should be provided for all and smart mobility provisions should also include smart biking and walking. Market stakeholders should be required to produce smart and efficient public transport options rather than smart luxury cars for individual use.

Attractive transportation: Transport planning should provide safe, accessible, and liveable spaces in all parts of cities. Smart solutions for shared transport and various non-motorized transport modalities should be created for broader, more diverse groups of people.

Sustainable transportation: Non-motorized transport should be included in smart transport ideas and practices. Action should be taken to motivate and to educate different groups of citizens to prefer non-motorized modes of transport for the last mile transit. E-bikes and shared sustainable forms of transport should be

cheap and accessible to all, including parents with children, people who travel with luggage or goods, elderly people, and people with disabilities.

Gender Smart Mobility and the application of the indicator are both ambitious and complicated, as we will show. Yet the concept and its applications have the potential to create change at many levels. The rationale is to bring in and advance the social aspects of smart mobility in combination with environmental, economic, and technical dimensions. The notion *s*harpens critical analysis of gender-blind approaches to planning, production, and policymaking in relation to smart transport as well as in the usage and consumption of smart transport services. Gender Smart Mobility addresses smart mobility in fresh and innovative ways that offer the prospect of more reflective approaches to mobility for all, across gender, age, disability, and class.

Notes

1 These are the main points made in a study of cyclists in the Swedish capital, Stockholm, in the mid-twentieth century (Emanuel 2012).

2 For a discussion on the formation of cultural gender norms and ideals in the nineteenth century, see Sheila M. Rothman, Women's Proper Place: A History of Changing Ideals and Practices, 1870–Present (New York, 1978, Basic Books); Rosalind Rosenberg, Beyond Separate Spheres: Intellectual Roots of Modern Feminism (New Haven, 1982. Yale University Press); and Nancy F. Cott, The Grounding of Modern Feminism (New Haven, 1988, Yale University Press). For insights into changes in the lives of American women in the twentieth century, see pt. Ill, 'Modern America, 1880-1990', in A Companion to American Women's History, ed. Nancy A. Hewitt (Oxford, 2003, Wiley Blackwell Companions to American History), pp. 225–432.

3 (July 7, 2018–October 21, 2018 Location: The Car and Carriage Museum Driving the Disenfranchised: The Automobile's Role in Women's Suffrage | The Frick Pittsburgh) approached 15.1.2022.

4 The number of registered vehicles in the world rose from 126,888 million in 1960 to over 1 billion in 2010. These numbers represent the number of cars light, medium and heavy-duty trucks; and buses, see http://en.wikipedia.org/wiki/Motor_vehicle

5 At the global level, the auto industry is regarded as the leading driver of global economic growth (cf. the International Organization of Motor Vehicle Manufacturers) and it has expanded over 30% in the ten-year period ending in 2005. The industry is a leading employer throughout the world, with 9 million people involved in making 60 million vehicles, or 5% of global manufacturing jobs. Indirect employment from automotive activity is fivefold, representing 50 million jobs connected indirectly to the auto industry. Other industries involved in the manufacture and service of vehicles include textiles, plastics, iron, steel, glass, aluminum, computer chips, and rubber. The industry also involves significant research and development activity, representing investment of nearly $85 billion. It is estimated that the manufacture of vehicles contributes more than $430 billion to the governments of 26 countries combined. See http://www.reportlinker.com/ci02294/Automotive.html

6 In 1987, the Commission – chaired by the Norwegian Prime Minister Gro Harlem Brundtland – provided a definition of sustainable development that was used for the next 25 years.

7 This indicator rests on a (normative) concept of Gender Smart Mobility as broad, inclusive, and dynamic and is inspired by a merging of various perspectives found in Marsden and Reardon (2017); Lyons (2018); and Gendered Innovation project: https://genderedinnovations.stanford.edu/

8   EIGE: European Institute for Gender Equality. Measuring Gender Equality through a Composite Indicator. https://eurogender.eige.europa.eu/system/files/events-files/03%20 EIGEs%20Gender%20Equality%20Index%20-%20general%20presentation.pdf

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3 Gender and Diversity in Transport

Theories and Concepts

Daily transport is 'gendered' in the sense that transport and mobility is linked to everyday activities. These include travel to and from work, picking up children, and food shopping. In most societies, these activities are still divided by gender. However, how we travel and for what purpose are influenced by much more than gender. Age, ethnicity, class, and geography are some of the other variables that influence people's mobility patterns. The focus on diversity within and across gender is captured in the term 'intersectionality' (Crenshaw 1989). Working with an intersectional approach in transport means recognizing not only the differences in people's mobility needs but also their opportunities to access particular modes of transport. If we forget about these differences, we get a transport system that simply ignores some parts of the population's mobility needs.

Taking gender and diversity into consideration means shifting the focus from things to users. Although the bicycle in isolation is 'just' a bicycle, the users are not just 'one user'. Taking gender and diversity seriously in transport policy and planning means moving away from a notion of users as one big homogeneous mass that includes 'everyone'. Still, perspectives on gender and diversity are seldom recognized in the planning and design of mobility. 'We don't care about genitals', a transport planner said when confronted with the gender perspective, 'we plan for everybody'.

As we saw in the last chapter, smart modes of transport promise greener and easier mobility in the urban landscapes of the future. Not only cars but also micro-mobility such as bicycles and scooters have been touted as a big part of the solution, especially within what has been called the '15-Minute-City' (Moreno et al. 2021). These forms of micro-mobility are transportation solutions that are already on the streets. A large part of the world's big cities offer the population various forms of bike sharing schemes (BSSs), which are claimed to be a sustainable, cheap, and easily accessible form of transport for everyone. But how does the smartness of shared bike systems look from a gender and diversity perspective? In 2020, one of the authors set out to examine the smartness of the shared bike systems from the perspectives of gender and diversity (Breengaard et al. 2021).[1] Based on the Scandinavian context, specifically Denmark and Sweden, we asked who BSSs are smart for and especially who they are *not* smart for. The study rejected the idea that shared bicycles are for everyone but, in particular, it became clear that the part of the population which performed so-called mobility of care, i.e., accompanied

dependent family members, most often children to school and day care institutions, had very little benefit from this smart mode of transport.

The concepts of gender

It is not only persons but also objects that are seen as gendered. In everyday life, we deal with a lot of transport- and mobility-related things that are perceived as belonging to one gender, to women or men. Some are deliberately stated as such; for example, there are certain cultural norms for which colours we consider appropriate for girls and boys just as artefacts, such as cars, tools, dolls, clothes, and gadgets are attributed with certain gendered meanings and interests. Other things and forms of behaviour appear to be gender-neutral: a highway, a sidewalk, a shared bicycle system. In this chapter, we challenge ideas about gender neutrality which are often used by politicians and planners in transport. The reason for doing so is that assumptions about gender neutrality tend in effect to be gender-blind, that is, to ignore factual gender differences. Yet, before we can do that, we need an understanding of the concepts of gender and the related notions that come with them.

For many people, gender is still seen as a natural fact – as a fixed biological category of sex which cannot be discussed or changed. Gender research, however, has demonstrated that gender is a social category that refers to the cultural meaning-making of people as either male or female; perspectives of non-binary gender are also recognized. Gender refers to social roles associated with being male and female as well as the relations between women and men, girls and boys. As such, the dominant understanding of gender is binary: one is either a woman or a man. In addition, there is an idea of these two genders as opposites: soft/hard, passive/active, caring/aggressive are some of the dichotomies that are associated with femininity and masculinity and that also influence ideas about mobility and transport. The social element in the category of gender emphasizes how gender roles, opportunities, and relationships are socially constructed and learned/acquired through processes of socialization. Gender roles are to a large extend historical and context-specific and have changed over time.[2] As we saw in the last chapter, dominant gender roles in the field of car culture and mobility were established along with modern society and with new natural and technical sciences. They operated with very fixed ideas about gender differences associated with biological traits. While we have seen a break-up of many of these ideas and practices in the twentieth century, it seems as if transport and mobility remain laggards. Indeed, it looks like the nineteenth-century paradigm/outlook is still prevalent. For example, if we look at current daily mobility patterns, in many parts of the world women are still passengers rather than drivers. Or if we look at the transport sector as a labour market and consider bus and truck drivers, as well as pilots, women are still a minority.

Gender norms

Emphasizing the processes of socialization, much gender research has focused on the opportunities and limitations that arise from cultural notions of who women and men are and who they should be – also spelled out as gender norms. Gender norms

refer to certain standards and expectations of how to be a woman or a man. For example, we have different expectations of what is feminine and what is masculine. Gender norms thereby influence what we expect, allow, and value in a woman or a man. Gender norms are culturally constructed which means that they might vary through time and location.

Gender norms in various parts of the world also vary greatly when it comes to mobility and transport. We cannot assume that norms about gender are the same in all countries at all times. As late as in 2018, women in Saudi Arabia were able to sit behind the wheel after the historic lifting of the ban on women from driving. In 2018, 19 countries around the world still legally restricted women from working in the transport sector doing the same jobs as men.[3] In most societies, there are differences and inequalities between women and men in the responsibilities they are assigned, their activities, their access to resources, as well as decision-making opportunities.[4]

Gender stereotypes

Gender norms are closely linked to gender stereotypes. Gender stereotypes are preconceived ideas about what a man or a woman is, does, or thinks. Everyday life is full of gender stereotypes, and this also applies to transport. Popular films and literature tend to present men as travellers, fond of cars and speed, while women more often are presented as passengers or in domestic spheres.

Adverts also play with these stereotypes. Visualizations used in smart car campaigns tend to show businessmen, linking men and a certain profession to the agency of these cars. Stereotypes are often so deeply rooted in our culture that we do not think about them. Yet, they can limit the development of talents and abilities as well as educational and professional life opportunities of girls and boys, women and men. Stereotypes do not just relate to gender but draw upon other categories too, such as age, social class, and ethnicity. Often the categories play together and interact in the meaning-making of stereotypes. There are, for example, different stereotypes attached to a young ethnic minority boy than to a young ethnic minority girl. Stereotypes simplify their subject by ignoring the complexity and diversity found empirically when we study real people and their behaviours. In this way, stereotypes by definition do not represent any adequate qualitative or quantitative knowledge about the people they describe. Yet, they might influence our ways of thinking, linking certain users to certain means of transport, as is the case with businessmen and smart cars. The visual linking of gender and cars will be discussed in Chapter 6.

Sex: The materiality of bodies

Gender norms and stereotypes have a great impact on how women and men are positioned and position themselves in society. Interests and attractions often hold a gendered dimension and so do the work functions that people perform in the labour market and in their homes. Gender roles have an obvious impact on women's and men's transportation patterns and needs. That said, the sociality of gender alone

cannot explain all the diversities in needs related to transport. Bodily differences too have an impact on travel needs, transport accessibility, and safety.

While in everyday language we seldom distinguish explicitly between what is a matter of a person's sex (biology) or gender (culture), this distinction might be beneficial when working with gender and transport at an analytical level. Sex refers to the biological characteristics that define humans as either female or male. In most cultures, biological or genetic characteristics such as genitals or chromosomes work to differentiate humans into two categories: women and men. This binary sex distinction is not completely adequate as biological variations occur. Yet, the attention to sex is also an attention to the diversity in bodies that exists between women and men at a general level. Men's and women's bodies have average differences. This applies to factors such as height and muscle mass. Another difference is that some bodies may be pregnant and more vulnerable in transport than non-pregnant bodies or have other needs in terms of accessibility or safety. Although we meet these body differences every day, they are not necessarily contemplated in the transport design. For many years, only male bodies were used in the design of car crash test dummies. A female counterpart was only included in crash dummies in the United States in 2011 (Perez 2019: 187). The use of male standards to measure what happens to bodies in car accidents – that is, where airbags should be placed, how the seat belt, headrests, and car seats fit best – did not, therefore, take into account the smaller stature of the female body, nor did they take into consideration a pregnant body. This caused serious problems in actual car accidents. The impacts of car crashes on women and men, respectively, were not discovered since statistics on consequential injuries for a long period of time did long not include the category of gender. When gender was included in the statistics, it turned out that women were under-represented in car accidents but over-represented in serious injuries.[5] That is, when women were involved in car accidents, there was a greater risk than there was for men. This may indicate that safety design does not take into account the female body.

Box 3.1   Embodied views/Curious George 'Monkey size me'

The monkey Curious George is planning a birthday party for the man with the yellow hat. George is told that the planning will be an easy task, yet throughout his preparations he experiences that everything has a wrong size: too big, too wide, too small. 'If only he lived in a world where everything was the right size, George's size'. George immerses himself in a dream world where everything is just the right size for a small monkey like him. As measurements are now named 'George', he is *the size*, making all preparations an easy task for him. Yet, while the world, including cars and furniture, is the right size for George, other people are now too big for their cars and apartments. This creates another problem, as the majority of people are not fitting into the George size standard design of things.

Source: Curious George 'Monkey size me' S05E05

The example of Curious George illustrates how difficult it is to engage in everyday activities when the world is not designed according to one's needs; how easy it is to do well when the world is designed according to one's own size; and yet how impossible it is when everything is designed around one single standard. Using only the 'standard' (i.e., average) male body in studies and tests means that women are left out of the 'discovery' phase in design. Those men who do not fit into this standard size of a male are also left out. Another problem is that conventional seat belts do not fit pregnant women properly, which means that car crashes are a great risk of fatal death. With more than 13 million pregnant women every year in Europe and the United States, the misfits of seat belts during pregnancy constitute a serious safety concern. Further, although car crash test dummies today are also modelled on female bodies, they are not always used and, moreover, the design appears deficient.[6] Today, the male body still dominates in studies of car crashes or tests of airbags and their impacts on the human body.

When looking at bodies, it becomes clear that biological sex is not the only element that defines a body. Bodies are not just 'male' or 'female' but are also influenced by other factors such as age and disability. Older people as well as children have mobility needs that are not always taken into consideration in transport planning and design, such as step height, seat design, and positioning of grab rails in public transport equipment. People travelling with prams and wheelchairs, as well as older people, benefit from designs such as buses and trains with low-entry floors. Modern cars are equipped with seats and steering wheels that can be adjusted to the driver's leg and arm length, but there some possibilities for other modifications, such as size of screens, buttons, and pedals (Loukaitou-Sideris 2016). Even though bodies are different, transportation modalities are very seldom designed for different-sized people. The challenge is both to address these needs and to create proximity to users in innovation processes and at the same time create smart facilities without creating new stereotypes.

Gender scripts

Technological objects, such as cars, are commonly perceived as 'neutral objects'. In order to approach the gendered dimension of new technologies such as smart transport, the concept of gender scripts offers an understanding of the social shaping of technologies. This counts the social relations which interact with the technology during processes of design, development, and production (Manderscheid 2018). Gender scripts refer to the social processes of making technologies. In the making of technological solutions, designers define the imagined users with specific characteristics, such as taste, competences, motives, and aspirations. All in all, these features are what make users want the particular technology. In this process, designers are 'inscribing' a certain vision in the new technological object, which attaches particular meanings and lifestyles to the objects.

Working with the approach of gender scripts aims to catch sight of and locate the gendered meanings that lie behind or are imbedded in the design of things; that is, to see how the design of material artefacts, such as cars and bicycles, might be

Figure 3.1 Design depicts gender.

Sources: Michala Hvidt Breengaard (photo).

influenced by particular notions of gender. An obvious example is that bicycles made for boys are most often blue, perhaps with superhero figures, speed stripes, and flames, while bicycles for girls come in a pink colour with flowers. These are examples of visible gender scripts, also illustrated in Figure 3.1. There are also implicit scripts that lie behind the design of things which are promoted as 'neutral' and 'for everybody'.

To analyse the more hidden gender meanings in things, questions can be asked on several levels, for example, the material object, practices, and identities of users and presumptive users. The notion of scripts plays a key role in science and technology studies and has been applied to empirical analyses of aspects of technology and human action. Gender scripts along some of the same lines refer to explicit and implicit gendered bias in technological objects such as cars and bikes and walking devices which are commonly perceived as 'neutral' objects. The social shaping of certain technologies, such as cars, includes the material object, the practices involved in using it, and the identity of the (supposed) user. These are different layers in a script, which are useful for thinking about and analysing gendered dimensions of mobility. Analysing the *material object* means looking into the plurality of transportation means. Asking who is the target group of a certain type of car, bus, or bicycle and who is not is an example of including the materiality of transport

objects. On the level of *practices*, we can ask how a particular means of transport is designed to be used, how specific groups of citizens are actually using this form or design of transport, and again, who will not have the opportunity to use it. What are the mobility patterns of both users and non-users? Analysing the *identity* of supposed users means asking which types of people are associated with a particular means of transport and which groups are kept in the margin.

Going through these questions can shed light on who might benefit from new technologies and who will not, who is included and who is excluded (Lucas 2006, 2012; Lucas et al. 2019). Gender scripts can also highlight the role of designers and planners and point to how important it is to include these experts in research processes. The approach shows how varied types of transport and mobility practices inscribe women and men in different ways. As we will discuss later in this chapter BSSs are promoted as 'for everybody' in their design as 'one size fits all'. Gender scripts can both reveal and challenge this idea, showing how the mobility form that is inscribed in the use of shared bicycles is largely performed by already mobile individuals with no caring responsibilities. In the following, we present an example of how gendered scripts can be applied to the smart transport modality of new automated cars.

Gendered scripts of automated cars: The masculine appeal?

> Cars are infused with powerful visual messages about the age, sex, race, social class and lifestyle of their user. Cars are a major feature of conspicuous conception for men and have a central place in male culture: The masculine fantasies they represent take different forms, as can be seen by the contrasting designs of smooth, aerodynamic-style sports cars and the rugged, four-wheel-drive "range rovers." They have in common their symbolization of individual freedom and self-realization.
>
> (Anthropologist Daniel Miller in Wajcman 1991)

Existing studies of smart mobilities point in various directions when it comes to their attraction and use by different social groups. On the one hand, there is a promise of a new beginning with automated cars as an avenue towards a more equal and genderless mobility regime. The coming of the driverless car is foreseen, at least in principle, to loosen the strong bonds between men, masculinity, and cars, which marked the automobility era (Dant 2004; Balkmar & Mellström 2018). On the other hand, studies find that women are excluded in smart mobility solutions and there is also potential racism in representations of the automated car (Hildebrand & Scheller 2018; Manderscheid 2018). Both words and images of automated cars are routinely presented with an appeal to ideals of middle-class men and masculinity.

The German car company Bosch is one of the big players that connects smart cities and smart mobility. Smart cities and mobilities have been closely connected to the interests of big technology companies, among them the German-based global technology firm, Bosch, together with other global companies, such as Siemens, Toshiba, and Google, have played a role in launching the idea of smart cities. In

an online presentation by Bosch, smart technology and automated cars were presented as independent, self-determining, and reasonable with a clear visual appeal to white middle-class businessmen.

'We believe that such systems have the potential to deeply impact 21st century societies. They will increase quality of life for everyone, transform mobility, raise productivity, improve resource use, and enhance human safety'.[7]

While many visual illustrations of smart cities and smart cars are devoid of people with only the prevailing technology in focus, the driverless car is also sometimes illustrated with a businessman sitting working in the vehicle, while women and children are relegated to outside of smart mobility, for example, as walking. Moreover, sometimes when a woman is in the driver seat of the autonomous car, she is characterized with the same 'business' connotations, for example, a white shirt and black skirt.

The link between driverless cars and businesspeople can be seen as a gendered script, which connects a certain identity (businessman or businesswoman) with a certain type of mobility (automatic driving). A script works on various levels, connecting some identities to practices of either driving or being a passenger. While gendered scripts highlight these gendered aspects in seemingly neutral artefacts, such as cars, the question is also how new types of inscriptions can be introduced in order to achieve more sustainable and just visions of European transport strategies.

Gender scripts of things and technologies are not static. The car industry has in recent decades presented products that address women as active drivers, often connecting them to family roles or to certain age groups and to small, sporty, or 'chick cars'. For example, in 2015, the mini car became the most popular car among mature women in China, conveying a message of autonomy and independence (Wajcman 1991; Christensen 2015).

Gender scripts can also be – and already are – actively used in ways that challenge gender stereotypes about who uses certain modes of transport. We cannot avoid scripts in design as scripts are fundamental in meeting users' needs. Yet, we can try to avoid the stereotypes that come with gender scripts. Being aware of the scripts and introducing new gender scripts can be a way to change cultural ideas of how gender and modes of transportation play together.

Box 3.2   New role models: Challenging stereotypes and producing new scripts

Finding new role models is one way to challenge dominant scripts of stereotypes in the field of transport.

Emilie Rath is educated as both a car mechanic and auto-technologist. She grew up in Denmark but went to London with a dream to work at Formula 1. Rath now works with the motor sport and auto-motorized sector, and she has known since the age of 14 that she needed to do a pit stop in motorsports. She was former chief car mechanic at Mercedes in Formula 1, and she now

works as technical leader in customer services for Ford in England. During her apprenticeship, she received prizes including 'The apprenticeship award of the Metal Industry' and 'The Queen's Medal Celebration'.

TInnGO 2021. See the full report at https://koensforskning.soc.ku.dk/ projekter/tinngo_nordic/tinngo-aktiviteter/dokumenter/plakatfm.jpg_kopi

Being aware of gender scripts is an analytical approach to understanding the mutual meaning-making of transportation as a process that entails definitions of both objects (the smart car) and subjects (a businessman). As such, the approach of gender script offers an analytical tool with a strong focus on understanding. Although the understanding of these issues takes us a long way, we still face the most difficult part: how to do it in practice! Chapter 4 and particularly chapter 5 will address the question of practice.

Diversity: The intersections of social categories

An 81-year-old woman might have very different transport patterns and needs than an 18-year-old woman. And a 54-year-old ethnic minority woman might have different transport patterns than a 54-year-old ethnic majority woman. Such self-evident examples reveal that gender is part of a broader socio-cultural context. Other important criteria for socio-cultural analysis include class, race, poverty level, ethnic group, age, and disability. Gender Smart Mobility approaches in research, data collection, and analysis require consideration of how different variables are entangled. Moreover, intersectional analysis refines the approach to gender studies and goes beyond essentialist notions of women and men as homogeneous groups. The idea and methods of intersectionality can provide a nuanced understanding of plurality within gender categories. Intersectionality highlights that women and men do not form contrasting and homogenic entities but include various differences within each category. In this book, we define intersectional analysis as treating both discrimination and privilege based on various grounds, such as gender, age, class, ethnicity, and disability. Categories are interwoven and mutually affect each other (Crenshaw 1989).

Box 3.3   Intersectionality

As previously described, the notion of intersectionality was developed by the black feminist scholar Kimberlé Williams Crenshaw in her paper 'Demarginalizing the Intersection of Race and Sex' (1989). In this paper, Crenshaw argued against the tendency in contemporary anti-discrimination law and feminist theory to treat race and gender as mutually exclusive categories.

Using black women as the point of departure, Crenshaw found that law and theory seemed to treat discrimination against black women as a matter of *either* race *or* sex. Instead, she argued that black women face a combination of both racism and sexism. Yet, the combination of categories, termed intersectionality, makes black women subject to a form of discrimination that white women – or black men – do not experience (Crenshaw 1989). Intersectionality as a theory as well as an analytical methodology has gained ground and been developed further in gender studies since the 1990s; it has entered politics as well.

The intersectional approach might advance the understanding of gender and transport by including more variables that show how transport needs depend not only on variables such as age, income, and location but also on time factors and safety issues as well as needs of control or relaxation. Intersectionality can identify the multiple factors that lead to diversities within groups of women and men as well as their travel behaviour, choice of transport mode, and barriers to accessing transport. As such, intersectionality means going beyond disparate notions of men and women and instead working with a more complex understanding of gender as a multiple social category (Law 1999). Taking intersectionality seriously in transport research, policy, planning, and design means paying attention to how the intersections of different social categories play together with various transport patterns and needs. In the everyday lives of various groups, transport is a crucial element in being able to get to work, to school, and to participate in leisure activities as well as engage in democratic events, such as public hearings and voting. That makes transport an issue that supports – or hinders – the possibilities that people have to engage in society and it is thus a vital dimension in the creation of equal opportunities for all.

As smart transport emphasizes multiple factors, such as transport safety, reducing pollution, and travel costs, an intersectional analysis of people and transport investigates how each of these factors in transport intersects with the different variables of gender, such as age, income, and capability. Adding equality to the scene of transport highlights how transportation is not just about physically moving people from A to B, but is also a social, economic, and cultural matter, and concerns the location of people in society. Looking at how people and transport intersect means investigating how to provide equal access to transport, how this influences gender equality, and how increased gender equality can influence transport choice and behaviour. We will turn to more examples of this work in the next chapter.

Analysing the intersections of transport and gender together means investigating the relations not just between but also among genders and transportation in terms of different social, cultural, and geographic contexts. The approach is captured in the concept of Gender Smart Mobility, introduced in Chapter 1, which highlights both the integration of a gender and diversity perspective into smart transport as well as the intersections of gender, diversity, and transport. Gender Smart Mobility

suggests that transport and the users of transport cannot be understood separately but constitute a mutual relation of opportunities and barriers. This focus on how the various components of transport and users of transport mutually inform and change each other is meant to provide knowledge that is specific enough to translate into actual targeted action.

While gender has been a subject in transport research for several decades, there is a tendency in more recent studies to include a stronger perspective on diversity. Studies have moved away from a focus on women and men as two homogeneous and distinct groups to focus on the differences that exist *within* groups of women and men. Age, class, ethnicity, and disability have entered the field of critical investigation into how transport systems benefit different users. The greater focus on diversity reflects a trend in gender research towards an increasing interest in the structural oppression of people in diverse categories such as race, ethnicity, and sexuality (see the discussion above on diversity in the theory of intersectionality).

Equality or equity

While transport might be conceived as a matter of physical movement from A to B, as a planning challenge or as an environmental burden to our societies, it also plays a central role in the making of a just society with equal opportunities for all. Taking the perspective of diversity seriously means considering the different opportunities that people have for everyday mobility. Asking people to buy an electric car does not work if they do not have the economic resources to do so – or if they have no driver's licence. Considering the perspectives of gender and diversity implies a clarification of what is meant when talking about transport for all.

The term 'equality' is often used to describe a situation where everyone has the same opportunities in life – it can be in relation to work, in private life, or to achieve goods in society. While describing a state of reality, the concept also includes a notion of how initiatives towards equality are best designed and implemented: an equality-oriented approach means offering all people the same, in the sense of 'similar', resources and options. This approach to equal treatment is often spelled out in public bodies in the formulation 'all must be treated equally in the face of the law' (Svanfelt 2020: 282). In the field of transport, the idea of equality is translated into actions for all: we are simply giving all citizens the opportunity to use a new car-sharing system – or BSS. Here, we might start to sense certain problems with this approach. In effect actions for equality might translate into an 'one size fits all' thinking, which takes little account of the gender and diversity.

The term equality can be compared with a less commonly used term, namely, equity. Equity assumes that people are different and offers them different means to achieve the same thing in life. As such, equity is diversity-oriented in its approach to an equal society and focuses on diversity as the means towards equality, where equality can be said to have a stronger focus on the goal and less on the process. Yet, the two approaches might have very different outcomes for marginalized people. Plenty of examples exist that illustrate the practices of equality and equity and their outcomes.[8] In the transport context, we can consider the equality

approach using the following example: an 8-year-old girl, a 25-year-old man, and an 82-year-old woman are offered a free subscription to the city's new BSS. Who would benefit most from it? What would the offer look like if equity informed it instead?[9] See also Chapter 5 on equality versus equity and justice for a discussion on the different implications of these concepts.

Mapping gender and transport

The inclusion of gendered dimensions of daily mobility and transport is key to creating sustainable and inclusive smart mobility systems. Although cars, bicycles, roads, and walking paths in themselves are not gendered, the users are, and thus so are the ways in which these infrastructures are used. Mobility is a major factor in people's lives: getting to work, picking up children, and shopping, as well as participating in social events and leisure activities. In short, if there is no mobility, none of these options are available. Yet, gendered travel differences have so far been downplayed in transport research, planning, and policymaking at European and global levels. When politicians, planners, and designers of transport focus exclusively on the materiality of transport without considering the social dimensions, we get a common transport system that is used differently. That is, a transport system that suits some users better than others and which even makes everyday life more difficult for some people. In this section, we present work that has documented and explained actual gender inequalities in transportation. It covers both findings on diverse travel patterns and feelings of insecurity and even incidents of assault that occur in transport.

The gender and diversity factor in transport patterns

The factors in gendered travel patterns have been demonstrated by a well-developed field of literature. A body of research has shown the differences in women's and men's use of transport (see, e.g., Hjorthol 1990, 1998, 2000; Turner & Grieco 2000; Houillon 2004; Polk 2004; Cristaldi 2005; TRANSGEN 2007; Næss 2008). These studies show that women are more likely to make multipurpose trips, for example, home-kindergarten-work-kindergarten-supermarket-home where men more often do A to B trips, that is, travel between home and work. Research into gendered travel patterns also finds that women tend to make more non-work trips, more suburban trips, and trips out of peak hours. On the other hand, men have greater access to cars and are more likely to travel by car as well as to travel further distances. Travelling longer distances increases the opportunities to change jobs and hence to increase salary. These findings have been seen in the context of how infrastructures are planned. If the road network is designed according to an A to B standard, it will better meet the travel needs and patterns of men than that of women. This is not just a matter of longer and more difficult travel conditions but also a factor that influences the choice of workplace, tendencies to choose part-time work, as well as opportunities to pursue leisure activities. In other words, our common infrastructure leads to inequalities in women's and men's life opportunities.

Gender differences in transport use have been explained by gendered divisions of labour in most societies: women's traditional responsibility for household and caring, picking up children from childcare institutions, shopping for groceries, and other domestic chores that women are expected to perform within existing social structures can explain their multipurpose trips. Men's home-work travel patterns can be explained by their traditional status of being the main wage-earner in the household. Gendered driving licence differences have decreased in Western societies during recent decades. However, women still tend to drive less than men and travel more often as passengers (Turner & Grieco 2000; TRANSGEN 2007).

Box 3.4   What's the problem?

Literature in the field of gender and transport concludes that not only travel patterns but also transport modalities are gendered. Some studies suggest that while women tend to travel in more environmentally friendly ways, they also face constrained mobility. Differences in travel patterns means that transport planning might benefit men and women differently. If actions to improve car driver infrastructures, for example, are dominant in each context, then men will benefit more than women from these actions as men more often drive cars. If bus lines are planned to serve people going from home directly to work, then they will not meet women's multipurpose trips. These are issues that need to be considered when doing gender smart research, planning, and design.

Gendering cycling regimes and intersectional approaches

Women and men, femininity, and masculinity, as stated earlier, are not homogeneous categories that can be generalized throughout time and place but depend on specific regional, social, professional, etc., contexts. From this it follows that the ways in which men and women, femininities and masculinities connect to transport differ culturally. This is, for example, the case in respect of cycling. Historically, cycling has had the potential for 'empowerment' of both women and men. The cycle was regarded as a tool of freedom for the suffragette generation. Yet, in some parts of the world, cycling is a mode of transport that is used more by men than by women, both in relation to commuting and as a recreational activity. In some non-Western countries, such as Morocco, cycling is considered unacceptable for women (Rask et al. 2017; Breengaard et al. 2021). In contrast, in countries with pronounced cycling cultures, such as the Netherlands and Denmark, women and men use cycling to the same degree (Engbers & Hendriksen 2010). Yet, there are differences within countries. Research on cycling in the context of Minnesota (United States) show that more women than men use the cycle for non-commuting purposes (Krizek et al. 2004). In Tokyo, where cycling is common for both women

and men, women are less likely to cycle to work than men but more likely to cycle for non-commuting activities (Heesch et al. 2012).

The notions of bicycling regimes are inspired by comparative welfare studies and the idea of welfare regimes. Looking at bicycling practices as a regime suggests an analysis at multiple levels, in terms of culture, economy, planning, and practice (Sainsbury 1999). Men still make up a majority of bike users both at global and at European levels. In bike-friendly regimes, such as Denmark, Germany, and the Netherlands, women come close to or make up over 50% (45%, 50%, and 55%, respectively) of all cyclists. Women's share of bicycling trips in bike-unfriendly regimes, such as the United States and the UK, makes up minorities of only 25% and 29%, respectively. Regimes are not static but dynamic; in recent years, Germany may have shifted towards a more bike-friendly regime (Aldred et al. 2016).

Box 3.5   London's cycling revolution – Intersectional lens

In the UK, Lam (2020) analysed London's cycling revolution from an intersectionality perspective, asking the question: 'For whom has there been a cycling revolution in London?' (Lam 2020). In so doing, Lam confronted the idea of value-neutrality in transport planning, which is based on the premise that everybody has an equal right and equal access to the common infrastructure. If people do not use it, this is a matter of individual choice. This approach, Lam argues, misses the different gendered understandings and experiences of moving around in urban spaces. For example, women might experience themselves as more vulnerable than men. Fear of accidents or harassment, for instance, is more pronounced among women and influences the mode of transport they choose as well as where and when they travel. Lam argues that since the city of London's cycling interventions support privileged cyclists (predominantly white, middle-class men) for whom cycling has become a lifestyle, other more vulnerable groups are neglected. In other words, the focus on already privileged and fully mobile subjects blindly carries a certain understanding of who cyclists are and what benefits them. As a result, the apparently neutral definition of 'cyclists' excludes a large part of the population at the same time as believing it includes everyone. This is an example of how one-sided approaches to transportation can lead to a narrative of success even though actions continue to produce unequal social structures and do not benefit the most marginalized.

In countries such as Syria, Albania, Afghanistan, Turkey, and Morocco, cycling is not normal practice and is often considered unacceptable for women. When people immigrate to countries where cycling is common, especially those from non-Western countries, they have not learned to cycle. Research from advanced cycling nations, such as the Netherlands and Denmark, suggests that some ethnic minority women see cycling as a means of taking part in previously inaccessible activities,

such as a walk in the woods or meeting past acquaintances, as well as something recreational and an improvement in their quality of life. This research shows that there are great challenges in learning to ride a bike later in life (Breengaard et al. 2021). Mobility matters for the social and economic integration of minorities. A Danish study shows a connection between increased cycling and less urban segregation. The study shows that the acquisition of cycling gives ethnic minority women more independent everyday mobility, instead of using public transport or as passengers in a car with family members, most often their husbands as drivers (Rask et al. 2017). Research also shows that mobility, including cycling, and integration are closely linked. Studies in Sweden have found that some immigrants do not see cycling as a means of transportation, but as exercise or as a way of playing related to childhood (Saad et al. 2017).

Until now, social group or class, as defined by income or education, is one of the variables that has had an impact on transport patterns. Steinbach et al. (2011) find that cycling in the streets of London is chiefly an activity of 'affluent, white, men' who may spend lots of money on the right biking equipment and clothes. Furthermore, cycling in London appeared to be connected to riskiness and aggressiveness and thereby to be considered more masculine than feminine. The study found that ethnic minority women seldom cycled, often not only due to issues concerning clothes, such as the wearing of long garments, but also because of the lack of knowledge and practical know-how. The authors argue that the lack of black and Asian cyclists in London's streetscape reduces these groups' opportunities to see cycling as a possible means of transport. The EU-supported gendered innovations[10] describes how energy consumption has a gendered difference within any given income group, but the difference, most pronounced in transportation, is not the same across income groups. In the lowest income category, men expend 160% more energy on transport than women, whereas in the highest income category, men expend 48% more energy than women. Differences in men's and women's transport energy consumption decrease as income increases but do not disappear altogether (European Commission 2013: 83).

Box 3.6   Class matters

That class matters are found in studies which show how both women's and men's willingness to travel longer journeys depends on their occupational status: high-status jobs motivate people and are more often combined with travelling longer distances than low-status jobs. This is not just a matter of class, since more men hold a high-status job, which makes men more likely to travel longer distances than women. However, studies suggest that well-educated women with high job positions are more likely to travel further than less educated women. These findings point to a gender stratification due to the gender-divided labour market and also within groups of women/men due to their different job positions (Hanson & Pratt 1988; Hjorthol 2000).

Age is another dimension in studies of travel patterns. Some older adults face poor mobility with substantial impacts on their well-being. Yet, studies suggest that women suffer more pronounced mobility impediments than men. This is because more elderly women live alone and do not have the resources to buy the assistance or services to overcome mobility problems; older women generally have lower pensions than men and cannot afford to buy cars to the same extent that men can. When women lose their (male) partner, they might also loose transport opportunities, since fewer women than men hold a driving licence. Also, even when elderly women do have a driving licence, they often have little driving experience because women tend to be passengers while men drive. Although there is a consensus about the relationship between mobility and quality of life of elderly people, research on this topic is still limited, especially concerning the variety of different groups of elderly (Hjorthol 2013).

The challenges of transportation for people with disabilities is another highly important area of research. Studies have shown that people with physical and developmental disabilities face limited mobility. People with transportation disability can be understood as people who 'cannot meet some or all their transportation needs without the direct help of others' (Wasfi et al. 2007: 4). With the right efforts, the mobility of people with disabilities can be improved and made easier for those travelling on their own. For example, it is crucial that for persons with sight impairments, such as blindness or partial sight, there is auditory traffic information (Golledge et al. 1996). Conversely, for people with hearing impairments, it is necessary to ensure that announcements about delays and restructuring of transport do not only take place over loudspeakers.

Box 3.7   UN Article 20 – Personal mobility

States Parties shall take effective measures to ensure personal mobility with the greatest possible independence for persons with disabilities, including

a facilitating the personal mobility of persons with disabilities in the manner and at the time of their choice, and at affordable cost;
b facilitating access by persons with disabilities to quality mobility aids, devices, assistive technologies and forms of live assistance and intermediaries, including by making them available at affordable cost;
c providing training in mobility skills to persons with disabilities and to specialist staff working with persons with disabilities;
d encouraging entities that produce mobility aids, devices, and assistive technologies to take into account all aspects of mobility for persons with disabilities.

Source: Article 20 – Personal mobility | United Nations Enable

Although there is a stronger focus on diversity in transport, studies are still scattered, and more knowledge is needed. Furthermore, this knowledge needs to form part of policy and planning processes to ensure that our future transport system is truly smart. While gendered transport patterns have largely remained unchanged over the last ten years, there have been major changes in the transport field and the sector will continue to change rapidly in the future.

Box 3.8   Barriers to mobility creates other barriers

Statistical differences in people's use of transport, of course, have real-life effects. Transport offers people opportunities to travel to different places, to access people and opportunities. Problems of mobility can form fundamental barriers to democratic participation and societal equality. That the accessibility to transport, the travel modalities and routes taken, the distance, time, and money spent on transport are shaped by gender also means that transport is central in the making of gender equality. And vice versa, if we forget to include gender and diversity in transport research and planning, we will contribute to social inequalities (Martens 2012; Grant-Smith et al. 2016).

Transport safety and security

Issues of safety and security are central objectives in gender-sensitive transport planning. Traffic safety has long been dominated by the engineering view of transport planning, whereas perspectives of gendered differences in people's perceptions of safety and security have been a separate field within feminist research (Levin 2015). Studies on the gender perspective of traffic safety and security have shown that women generally feel more unsafe than men when waiting for public transport as well as during commuting, especially in the evening and when it is dark. Women especially fear acts of intimidation, harassment, violence, and assault and the feeling of being unsafe can lead to an unwillingness to use public transport and thus present a barrier to mobility. To overcome their vulnerability in transport, women may develop an array of self-imposed protection strategies, such as avoiding certain settings or times of travelling, which then constrain their mobility (Law 1999). A 2019 study in Dar es Salaam, Tanzania, showed that 59% of female travellers experienced at least one form of violence, such as groping, cat calls, inappropriate comments, assault, or rape on transport in the previous six months (ieConnect 2020). While most studies on harassment of women in transport are based in the global south, gender-based violence in transport takes place everywhere (see, e.g., the study by Ceccato & Loukaitou-Sideris 2020) A 2019 survey in London, UK, found that women were almost twice as likely as men to point to personal safety as a barrier to choosing walking or public transport.[11] A study of women's experiences of gender-based violence on the London Underground explored how sexual harassment happens as well as how women negotiate and deal with harassment on public

transport (Lewis 2018). The work offers an enlightening insight not just into the fact that sexual harassment does take place, but also into how this form of violence is experienced and the strategies that are subsequently developed by women. Actions to improve street lighting and information on travel times have been shown to increase feelings of safety on public transport (TRANSGEN 2007). Even though these studies show that women are over-represented both in actual and perceived violence and abuse, intersectional analyses clearly showed that women are not a homogeneous group and that segments of men also are victimized (Ceccato & Loukaitou-Sideris 2020). Furthermore, surveys on LGBTQI and how sexual harassment affects non-conforming gender and transgender individuals found somewhat higher rates of victimization for LGBTQI persons compared with straight respondents. Transport for London has developed a comprehensive programme to reduce sexual harassment on public transport.[12]

Box 3.9   The #MeToo in transport

The #MeToo movement as a declared criticism of sexual harassment against women across a wide range of industries and contexts has surprisingly not been directed at the forms of harassment that women as well as minorities encounter in everyday transport. Taking #MeToo into the field of transport might show how big the problem of harassment in transportation is, who and how many are experiencing it, as well as the various forms of harassment in transport. In so doing, harassment in transport would become a topic that can be talked about.

Actions to prevent harassment in transportation are a balance between the approaches of 'fix the streets' and 'fix the abusers'. In the 'fix the streets' approach, measures are taken to increase feelings of security on the streets – for example, by better lighting, improving information about bus and train departures, setting up surveillance, emergency telephones, or deploying more staff on platforms. The 'fix the abusers' approach targets those who commit the assaults. Actions may be posters in public spaces declaring that various forms of harassment are not tolerated and will be punished, or campaigns that inform about the insecurity that many women experience in transportation but that few men are aware of. Whereas the first approach focuses on the planning and design of bus stops, train stations, and streets, the second is about changing the broader culture of harassment. In fact, effective prevention of harassment will often involve both approaches. That is, abusers must be targeted at the same time as actions address the (potential) victims of harassment and strengthen their sense of security.

Transport environments have an influence on perceptions of safety and feelings of fear shape the ways in which people use space and place (Koskela & Pain 2000). These feelings are lived on an individual level but must be seen in a cultural context. Fear is often created and reproduced in popular culture, such as films, as well

as in the media's focus on new violent events. Feelings of fear in public spaces are context dependent and must be studied in relation to time and place.

Violence in urban spaces, including violence and harassment on transport, has a gendered dimension. Other elements such as age, ethnicity, and sexuality also play a role. So does the means of transportation itself. Several scholars have viewed transport as a site of violence. Balkmar and Joelsson (2012) suggest that car driving is constituted by feelings of 'speed', 'fun', and 'happiness', gendered meanings that constitute a certain normality in violent driving practices. te Brömmelstroet (2020) argues that transport is a site of systematic violence. His work on how traffic crashes are presented in the Dutch media finds an ignorance towards and dehumanization of vulnerable road users, seeing crashes as 'accidents' rather than human tragedies. These perspectives on transport talk about vulnerable mobilities in relation to other more robust or even violent ones. Cyclists and pedestrians are part of the vulnerable mobilities, where motorized modes of transport pose a danger to these vulnerable people. Every year many people are killed by traffic. Many are car drivers in collision with other cars, while others are cyclists and pedestrians hit by cars. In this sense, the car has been described as a violent transportation system. Again, one can take a perspective on approaches of 'fix the streets' or 'fix the abusers'. A fix the streets approach will try to make the roads safer, i.e., by separating bike paths from roads with cars. A fix the abusers approach will create campaigns to make people drive more slowly and to stop taking risks as car drivers. Yet, some scholars have begun to criticize the underlying rationale of our entire transportation system, arguing that we need to think outside the box if we are to overcome the inequalities in transport. The cycling scholar Peter Cox argues that transport research, policy, and planning today is dominated by an obsession with data and technocratic solutions, looking for a 'fix' for symptoms instead of paying attention to the underlying issues (Cox 2020). Acknowledging that this 'fix' approach works to reproduce the status quo raises the need for more critical reflection on the fundamental ideas and categories in transport.

Gender-neutral or gender-blind

Although new smart mobility solutions are entering the scene and we are facing changes in gender roles and gendered divisions of labour, many of the gendered travel patterns described above persist and are widespread. This persistence is due to not only continued structural imbalances in society but also in the transport sector itself. Historically, the travel needs of the wage-earner have been privileged over the domestic sphere and this hierarchy is continuously replicated in much policy and planning, although often in a more invisible form. 'Invisible' here means that when transport research, policy, and planning assume that transport modes and needs are gender-neutral, they (unintentionally) reproduce the gendered imbalances in the transport system. Invisibility is indicated in the generic and gender-neutral terms of 'users' or 'passengers'. Yet, the question is, who fits the neutral standard of transport users or passengers? And more importantly, who does not fit into the standard of transport users and passengers? Taking the gendered hierarchy

of private and public domains into consideration, we might expect that certain needs are being privileged over others. For example, much transportation planning assumes that the male form of travelling by car from home to work – A to B – during rush hour is the prevailing form of travel in urban areas (Greed 2006, 2019).

This neutrality is a matter of gender-blindness. Gender blindness and gender neutrality are two intertwined ideas that work, in effect, to make inequalities invisible. Yet, gender neutrality is often used to indicate that something does not discriminate between genders. Sometimes the use of gender neutrality is due to what we do not want to talk about regarding gender. Gender is out of fashion, we have already achieved gender equality; people can do whatever they want to do. In other cases, gender neutrality stems from an isolated focus on things. We might design a bicycle and claim that it is a gender-neutral artefact. Few people will look at a car and say that this is indeed a very gendered car. Gender-neutrality is neither a constructive approach nor a goal, although it is most often presented as such. When looking at the gendered structures in society, the division of roles in the home as well as the gendered division of labour in the labour market, gender neutrality is at best a diluted concept. Despite the fact that in everyday life we move in and out of gendered spaces, meanings, and ways of acting, we still have the idea that a large part of the world is gender-neutral.

The idea of neutrality is based on an understanding of a neutral and objective view of the world from 'nowhere and everywhere', which the American gender researcher Donna Haraway called the *God trick* (Haraway 1988). Yet, if we assume that it is impossible to see the world from nowhere, is it time to ask where we are looking at it from? Research in the field of gender and transport have claimed that much transport is planned and designed from the viewpoint of a fully mobile, white, male standard (Henriksson 2019). Following this argument, gender neutrality is in fact male-centric. This is not a surprising argument. Think about the term 'manhood', which denotes both men and women, or pictograms, such as those at traffic lights, which are often male persons although they target everyone. Although the generalizations of 'man' into 'the standard' apparently include all humans, it is obvious that men might better fit this standard than women. Think of the use of crash test dummies designed from a male standard and what happens when women – with their shorter stature and possibly pregnant bodies – suffer a traffic accident. Fitting a standard of 'what a person is' means that one passes more easily through the world. From this position, the world might even be seen as neutral. Conversely, people who do not meet this standard will most often face obstacles. This also means that men are more often able to see themselves as a gender-neutral person, whereas women tend to experience processes of gendering more consciously. The French philosopher Simone de Beauvoir wrote her famous book *The Second Sex* (1949) based on these questions. Her point was that women were not born but rather made into women and the 'second sex' by society and culture (de Beauvoir 1949).

Gender-neutrality is in effect gender-blindness. It ignores differences, not just between women and men, but also across various other social categories, such as age or disability. As we interpret the world and its challenges from our own position, we might fail to recognize other kinds of obstacles simply because it can be difficult to see the world from a place other than one's own. A fully mobile person

will not experience the same difficulties in walking the streets as a person with impaired mobility. Here it can be an eye opener to try a little trick. Take a stroller or walker with you the next time you go out. Stairs that used to be overcome are now a problem. The same thing happens with high curbs, raised bus, and train entrances, as well as the sign with 'out of order' on the train platform's lift.

Unconscious biases

Gender-neutrality and gender-blindness have been described as 'unconscious biases'. Unconscious biases are stereotypes and prejudices that influence our understanding of the people around us and the decisions that we take. As the term implies unconscious biases typically work outside of consciousness and so we are not even aware that we are acting on them. The term is most often used in relation to recruitment procedures in management processes but can include other types of decision-making processes where unconscious views favour some people more than others (Fiarman 2016). Unconscious bias is what happens when we claim that we 'plan for everybody' but the planning appears to benefit male travellers more. 'Everybody' is not a measurable standard: we cannot go out to assess what fits 'everybody'. Thus, to succeed in the aim of catering for all people, we need to break 'all' down to measurable categories. We need to know about female travellers if we are to claim that we meet their needs. The same goes for age, ethnicity, class, locality, disability, etc. How can we know that we are planning for these groups, if we do not know about their mobility needs and travel patterns?

Box 3.10   Unconscious bias

Research suggests that people access the world through unconscious biases. Unconscious bias, also called implicit bias, indicates our involuntary and thus unconscious preferences on the basis of gender, ethnicity, sexuality, as well as other categories of identity. Tests have shown that most people favour the group they are a member of despite claims to have no preference. These tests also show that people across social groups often have preferences for the culturally most valued group. Unconscious biases can be in direct opposition to our beliefs as well as to our actual experiences. This puts the importance of unconscious biases at the forefront – we are simply not aware of them and how they influence our understanding of the world.

Source: Fiarman (2016)

The misfits of 'one size fits all'

This leads us to one last but nonetheless important challenge in approaching smart transport for all. We call it 'one size fits all' thinking in transport planning and design. We will use BSS as an example of this thinking, but 'one size fits all' thinking

is found throughout most transportation planning and design. For example, the use of male standard crash test dummies is based on this idea of 'one size fits all' and so is the planning of infrastructures from an A to B standard.

One of the more recent fields of research is new forms of shared micro-mobility, such as e-scooters and BSSs. Shared forms of mobility, including shared car schemes, are predicted to be increasingly popular in future smart cities and their demand for sustainable transport solutions (Yakoslev & Otto 2018; Duran-Rodas et al. 2020).[13] Shared bike schemes exist in many forms and systems, but generally these schemes offer rental bikes to the urban population. While the first BSSs used docking stations, the latest models are demand responsive, multimodal systems. BSSs are seen as one type of smart transport, offering easily accessible, cheap, and sustainable mobility for all. Moreover, the smartness of BSSs is indicated in the technological inventions of GPS and app-driven functions. Technology means that via app users can locate and reserve bikes in advance and scan a bike's Quick Response (QR) code to unlock the bikes. After use, people can just park the bike anywhere within the designated public parking spaces often strategically located in front of metro stations, public buildings, educational institutions, shopping malls, etc. The ambitions of BSSs have been described as covering the last mile, connecting larger public transport systems, and providing seamless transport.

Yet, we argue that BSSs present a striking example of smart mobility solutions that work from an idea of 'one size fits all'. The rows of identical rental bikes seem so consolidated that they appear almost as a trademark of the system. While the idea is that these bikes offer a smart mobility solution for the urban population, the question is, who is BSS actually smart for – and especially – who is the existing BSS not smart for? A study of BSSs in the context of Oslo, Norway, shows that bike sharing is used not only less by women than by men, but also that women and men use the BSSs for different travel purposes and distances: more men use the shared bikes to commute to work, while women more often use the bikes between appointments (Uteng et al. 2020).

A study of visual graphics and photos at four BSS companies' websites further showed that more women were represented in graphics, that the companies varied in their representation of non-white persons, and that young adults dominated the representation of bike users. This means that some of the excluded groups in the representation of imagined bike tours are elderly persons or people travelling with a dependent. A qualitative interpretation of selected images showed that the represented users at LIME, Donkey Republic, and NextBike were often young, slim, and enabled. This representation of bodies was challenged by the BSS VOI that included spacious graphics of bodies, including the fat body that could be a healthy, biking body too. LIME especially, but also Donkey Republic and VOI, appealed to amusement, youth, and freedom, and though this may be attractive, the service may not be reaching its full potential, as it is still being marketed towards early adopters, who have freedom of choice.[14]

Henriksson et al. (2022) have included BSSs in a discussion on transport justice. Transport justice is a term which concerns fairness and equity of transport solutions, including accessibility and affordability for different groups of people.

Asking who BSSs are designed for, who the users are, how and why people use it, and if the design and usage contributes to transport justice, the authors argue that the Swedish BSS, LinBike, has primarily been designed to meet the mobility needs of affluent user groups. That is, BSSs tend to meet the needs of those who are already mobile. As a matter of fact, people who travel with children, luggage, or bigger shopping goods do not have the opportunity to use today's solutions. The same goes for people with impaired mobility and those without smart phones, as well as people who work or live outside designated parking spaces.

Box 3.11   Transport justice

The concept of transport justice implies a transportation system which is based on principles of justice and fairness. A transport system can be considered fair if it provides a sufficient level of accessibility to all under most circumstances. While this definition of a just transport system might not be radical, the consequences for transport planning from the principle of fairness are differently profound. For example, where one of the main tasks of smart transport is to reduce pollution and congestion, the concept of transport justice takes a person-centred approach. Placing users centre-stage means considering the differences that can be found among transport users, including gender, age, income level, and residential location, as well as their physical and cognitive abilities, etc.

Source: Martens (2017)

These studies show how smart bikes – and shared bikes in principle – present gendered inequalities in biking technologies and designs. As most shared biking systems comes in a 'one size fits all' design, fitting all bodies and practices, they present a good example of designs that are intended for everyone. BSSs are promoted as a cheap, green, and easily accessible form of mobility for the urban population as a whole – all you have to do is sign up, swipe out, and ride. In general, one can say that the 'one size fits all' idea is based on a notion of gender and diversity neutrality. Yet, if we disregard the idea of there being one standard transport user, we see how one size fits all transport solutions favour some users – often those who are already fully mobile – and create further marginalization of those whose needs are not met in the standard model. The use of shared bikes is uneven and seems to fit men's needs, on average, better (Christensen 2019; Uteng et al 2020).

How smart is smart transport?

New smart transport solutions have entered the arena of research looking at the social aspects of future mobility landscapes. A common thread in these studies is the question of diversity in the wide range of new sustainable transport solutions,

described as 'inclusiveness'. The demand for inclusive transport is related to ambitions of environmental sustainability insofar as smart transport systems are only environmentally sustainable to the extent that they are used. If they cater for only a small percentage of the population, their promise of increased sustainability will not materialize. Furthermore, inclusive transport plays a part in creating societies where people have equal opportunities – this connected aspect of transportation can also be called social sustainability. Social sustainability is about whether new smart modes of transport will only meet the needs of some people while neglecting certain groups, and whether smart mobility in this way might reproduce social inequalities in society or even create new ones.

New smart mobility forms have entered the scene and might continue to produce issues related to gender and diversity. Gender does not catch the eye unless we look for it. The same goes for other social categories that cut across gender, such as age, ethnicity, and class. This means that we still have large gaps in our knowledge of the significance of gender and other diversity-setting variables for transport patterns and mobility needs. It also means that large parts of transport policy, planning, and design will continue to work from a notion of gender neutrality if we do not start to act. As difficult as it may sound, there are no easy solutions to catering for 'all'. 'All' and 'everyone' as gender- and diversity-neutral categories are based on one or standard or another: for example, people who drive a car, people driving between home and work. If we unwrap the assumption a little, we might rephrase it as 'because everyone drives a car between home and work, everyone will benefit from this highway'. Put at the forefront and even in less generic terms, this idea is pretty stupid. The good news is that the work of collecting gender- and diversity-specific data to use in transport research, policy, and planning is bearing fruit. The success rate of the actions is greater. A society where more people can get around more easily is a society that can save money, think innovatively, and create growth. The question, of course, is how to do it?

Box 3.12   Questions for reflection

How is 'gender' included in your work?

What diversity categories might it be obvious to keep an eye on in your work?

Who benefits from the efforts you as a company make? And who does not?

Can you identify some gender stereotypes in your professional working life?

Notes

1 The work took place together with Malin Henriksson during the European project TInnGO. More information on the project can be found at the TInnGO Observatory: https://transportgenderobservatory.eu/national-hubs/scandinavian-hub/
2 See more at www.eige.eu

3 "World Bank Group. 2018. Women, Business and the Law 2018. Washington, DC: World Bank. © World Bank. https://openknowledge.worldbank.org/handle/10986/29498 Licence: CC BY 3.0 IGO."

4 See more: www.genderedinnovations.stanford.edu

5 https://genderedinnovations.stanford.edu/case-studies/crash.html#tabs-2

6 Several articles have treated the problem of lacking female car crash test dummies: https://www.discovermagazine.com/technology/why-are-there-no-crash-test-dummies-that-represent-average-women; https://www.theguardian.com/lifeandstyle/2019/feb/23/truth-world-built-for-men-car-crashes; https://eu.detroitnews.com/story/business/autos/2021/03/16/no-crash-test-dummy-represents-average-woman-what-means-safety/6825041002/

7 https://www.bosch-mobility-solutions.com/en

8 For illustrative examples of the two approaches, see also https://onlinepublichealth.gwu.edu/resources/equity-vs-equality/

9 See more at https://onlinepublichealth.gwu.edu/resources/equity-vs-equality/

10 https://genderedinnovations.stanford.edu/

11 https://madeby.tfl.gov.uk/2021/10/27/tackling-sexual-harassment/

12 See more on TfL campaign on sexual harassment in transport https://www.intelligenttransport.com/transport-news/129481/transport-for-london-sexual-harassment-campaign/

13 https://www.bike-eu.com/market/nieuws/2021/01/sharing-is-the-new-owning-also-for-e-bikes-and-bicycles-10139603

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4   Gender Smart Mobility

Approaches

As we argue throughout this book, there is a lack of gender and diversity perspectives in the field of transport. This characterizes both research and statistics as well as the understanding and planning of transport. The small example below serves to illustrate this deficit.

In the spring of 2020, we participated in a workshop on Copenhagen's growing problems with bicycle parking. As a cycling city with many cyclists daily, Copenhagen faces crowded bicycle racks and a wealth of alternative forms of bicycle parking, which take up space dedicated to other purposes, such as walking. The question at the workshop was how the city could create enough bicycle parking for everyone. Following presentations from architects and municipal urban planners who gave their perspectives on these challenges, a behavioural scientist talked about nudging strategies. Nudging could get people to park their bicycles within demarcated areas or transfer them to less crowded bike racks located a little further away from the city's hot spots, such as the city centre's shopping and café areas as well as train and metro stations. Given the increasing diversity of cyclists, so that owners of cargo bikes or tricycles have difficulty parking in the standard bicycle racks and people with impaired walking or those cycling with children are not necessarily able to consider alternative, far away, parking spaces and then walk back, we asked how the nudging perspective could include this diversity of cyclists. The behavioural researcher's response was short and clear; they said that *when planning for the majority, it benefits everyone*. This was rather a surprising answer as it represented the complete opposite approach to what guides the field of gender and diversity in transport, which says that when planning involves minorities, it will benefit the majority as well. More concretely, the gender and diversity approach to bicycle parking would argue that specialized bicycle racks for cargo and tricycles would prevent their taking up space on sidewalks and in public squares. And bicycle parking exclusively for people with impaired walking or with disabilities could, in addition to providing better and easier access for these groups, alleviate pressure on standard bicycle racks.

The nudging expert's focus on the majority was, of course, not a real surprise. While diversity features in car parking have been accepted, with demarcated areas for people with disabilities or those with e-cars, cycling still stands as the Wild West guided by survival of the fittest even though most cities want to promote more

cycling. Thus, expertise on gender and diversity is needed if we are to introduce diversity to this field. Frankly, if somebody asked us (social scientists and gender experts) to develop a new smart battery for e-bicycles, we would have no idea how to approach this. So how can politicians, planners, designers, engineers, or architects work with a perspective on gender and diversity which they are not educated about and have no knowledge of how to approach it?

While gender scripts and inclusive language stand more as analytical and hands-on approaches to recognizing and avoiding gendered stereotypes and inequalities in transport, mainstreaming gender and diversity are strategies to ensure that equality is brought into all processes of policy and planning. With their focus on action, mainstreaming strategies include a number of hands-on tools to help actions – at different stages – take into account their gendered and diverse implications and evaluate their impact from an ambition of equal benefits and access. In continuation of the work on gender and diversity in transport, we will present certain resistances to working with issues of gender and diversity. Our experience tells us that one will encounter inertia and reluctance when these 'new' perspectives are introduced. In thinking that it is better to be at the forefront, we address some of the most common points of resistance and how to approach them. Finally, and central to the purpose of the chapter, we summarize these different approaches in the integrative strategy of *Gender Smart Mainstreaming*, an approach that connects to the overall aim of Gender Smart Mobility. The ambition of gender smart mainstreaming as a new approach to transport is amplified in the concept of gender smart mobility, which is central to this book. Gender smart mainstreaming lays out the dimensions that make up an equal and inclusive transport system. Throughout the chapter, we emphasize 'the how' by substantiating the approaches and strategies presented with cases from around the world which illustrate how to work with these in practice.

Where are we now?

Despite ongoing developments in smart transport, gender and diversity perspectives are still quite a niche in research, policymaking, planning, and design. The majority of transport research, by far, takes a quantitative approach in which social categories, such as gender, age, and class, might be included but as background variables rather than as main subjects of interest. Furthermore, disaggregated transport statistics on gender (when it is available, which is far from always the case) most often approach gender as binary with naturalized male and female variables without further consideration of context and specificity. In so doing, studies come to see gender as either man or woman, dividing those into two separate and rather homogeneous entities. This results in a very static approach that tends to ignore the diversity and variability within gendered transport needs and patterns as well as locking the perspectives into existing transport structures. The same problem can be found in branches of feminist transport research where various visions and strategies are included. Is the end goal, for example, to include women as car owners and drivers in line with men in the existing car-centric system? Or is the vision to create a transport system which echoes women's more sustainable yet also more restricted

mobility practices? The aim of this volume is to avoid such impossible choices and to explore new possibilities in the current turn to smart cities and transport.

Many studies simply recreate and reproduce gender stereotypes rather than allowing a game change. There has, for example, been a tendency in some feminist studies of mobility to point to women as 'agents of change' in respect of a future sustainable transport sector. These arguments are based on studies which find that women engage in more sustainable transport modes than men, having less access to cars, driving shorter distances and not so frequently (see, e.g., Kronsell et al. 2016). While these findings certainly prove useful in identifying the invisible norms and gendered benefits of transport planning, they might work to fix women and men in two opposite categories as well as preserving the current transport system with all its shortcomings.

Refining the problems further, the geographer Susan Hanson argues that gender and transport studies represent two disparate strands, which are rather disconnected from each other. While one strand works with how mobility shapes gender, the other strand analyses how gender shapes mobility. The disjoint in focus means a lack of approaches that investigate how mobility and gender mutually influence and depend on each other (Hanson 2010). Yet, solutions to achieving a smart transport system for all cannot be found if we look in isolation at the two areas: equal accessibility to transport on the one hand and sustainable mobility on the other. What we need are more approaches that consider gender, transport, work, social inclusion, and climate change in terms of their mutual relations rather than seeing them isolated from each other (Angeles 2017).

Think of the planning of infrastructures, which prioritizes private car transport as an example. While we must assume that these priorities are made to better facilitate the daily transport of the population as a whole, they might benefit more men than women. So, what if we imagine a scenario where women want their share of transport priorities and increasingly start to take the car? From an isolated perspective on gender, this might be a smart move. If we add a perspective on sustainability, it is less smart. The question could then be, can we 'afford' or 'allow' women's travel behaviour to become like the travel behaviour of men? (Svanfelt 2020: 273). Another question is how do we plan a transport system which is both equal and sustainable? We must begin to think about the two ambitions together. This is a pressing issue as the scenario is not just imagined. In Europe, statistics show that more cars are coming onto the roads and part of this is due to more women opting for private motoring (Caralampo & Panayotis 2017; Svanfelt 2020).

Inclusive language

Using gender-inclusive language means speaking and writing in a way that does not discriminate against a particular sex, social gender or gender identity, and does not perpetuate gender stereotypes. Given the key role of language in shaping cultural and social attitudes, using gender-inclusive language is a powerful way to promote gender equality and eradicate gender bias.

(United Nations, Gender-inclusive language)[1]

One place to start acting is through being critical of the ways in which we talk about things and people. As we have argued in the previous chapter on gender scripts, there are a lot of meanings hidden in things. In its very nature of being 'hidden' lies the fact that we might not be aware that we are reproducing some meanings that are not very productive for the ambition of creating an equal transport system that caters for all. Although it might sound neutral to us, the call for a vacant position as chairman is still a call for a man. Chair or chairperson is a more inclusive choice of concept. That language matters can sometimes become more visible when shifting.

Box 4.1   Turning words upside down

I follow the site @manwhohasitall on Facebook. The aim of the site is to challenge the gendered meanings that we often take for granted and see as neutral. That covers job and family positions, ways of acting, as well as the ways we use language. Sometimes it might be an eye-opener to turn words and meanings upside down.

'"The term spokeswoman is obviously gender-neutral and covers both women and men. The world has too many problems to be offended by nouns." Stefan, male spokeswoman'.

Source: @MANWHOHASITALL

Jobs in the transport sector generally hold strong gendered connotations. Even though the term 'truck driver' might seem neutral, our imagination of a truck driver is reminiscent of something hyper-masculine, which is also expressed in the word 'trucker', describing people we find masculine. Stereotypes of men and women as transport users or employed in the transport sector are clearly visible in the ways we attach pronouns to transport professions. When we talk about a pilot, we tend to imagine a man, linking the pilot to the pronoun 'him'. On the other hand, we imagine a flight attendant to be female and therefore refer to 'her' as 'she'. As such, the language of transport is full of stereotypes, which not only represent the present reality of gendered imbalances in the sector but also work to reproduce transport as a gendered system.

While language might express certain stereotypes connecting one gender to a job position, language also has a role in holding up these meanings. The promising aspect of this way of thinking about language is that awareness of inclusive language might help in creating a more equal transport sector. This is, of course, not to say that modification of language into less gender-biased terms and expressions will by itself change everything. On the other hand, it is hard to imagine a gender-balanced transport sector when job titles continue to be embedded with gendered meanings. Changing language is a step on the road to equality – and an important one.

In English language, as in many other languages, masculine nouns work as a generic expression of a person or profession – think about the expression 'mankind' or 'chairman'. The same is true for the masculine pronoun 'he', which can work as a generic expression, including both men and women. When we say, 'the train operator should inform his passengers about the problem', the train operator could be both a man and a woman – although we of course expect 'him' to be a man. Yet, if we are told that the train operator will inform 'her' passengers, there is no theory to back up the idea that the train operator might also be a man. Put differently, 'he' appears more neutral and works in general to cover everybody, while 'she' is specific. Yet, at the same time as the use of masculine pronouns works as 'all inclusive' and 'neutral', they are embedded with implicit cultural stereotypes about who belongs to a certain profession or acts in a certain way.

Gender-inclusive language is thus not the same as gender-neutral language. While gender-neutral language tends to *ignore* gendered differences in certain contexts, gender-inclusive language seeks to *include* all genders but in a non-stereotypical way. The purpose of using inclusive language is to avoid words that may be interpreted as sexist, biased, discriminatory, or demeaning by implying that one gender is the norm. To use inclusive language is a practical method of supporting gender equality and non-discrimination.[2]

Box 4.2   Gender and grammar – Some challenges

Sometimes, it is difficult to apply gender-inclusive language, due to specific features in some languages. For instance, while Danish, English, and Swedish are mostly gender neutral in respect of grammar, German, Romance, and Slavic languages have a grammatical gender. While the strategy of gender-inclusive language can be an approach to avoid gender-specific terms, it is almost impossible to apply this strategy in languages with a grammatical gender. When using these languages, different approaches might help to support a non-sexist language. Including a feminine version of masculinized words can be useful to avoid reinforcing gender stereotypes. So, including both feminine and masculine terms for certain professions, such as the German Kanzler/Kanzlerin (chancellor), help to challenge our understanding of the gendered functions and professions in transport and beyond.

Avoiding representations of gender stereotypes in language is one aspect of inclusive language. There are other factors to take into consideration when working with a diversity of people as well as their more or less expected positions in the labour market and in society as a whole.[3] One principle is to put people before their specific characteristics. Instead of talking about 'a blind person' or a 'female engineer', expressions such as 'a person who is blind' or 'a woman/person on the engineering team' are both more productive for equality and more respectful towards

the persons concerned. The principle of people-first language serves to keep the individual in focus instead of equating people with their disability or gender. In particular, talking and writing about people with disabilities has made a turn towards avoiding expressions of victimhood such as 'suffers from', 'confined to', or 'challenged'. The reason behind this turn is that expressions of victimhood often work to undermine the person's agency.

   Yet, the principle of putting people first has been debated for several reasons. One reason is that people-first expressions sometimes make sentences difficult to read. Another is that some people might actually want to emphasize their identity as 'blind' or 'handicapped' and find it frustrating to have their identity rendered invisible. These concerns call for caution and highlight the necessity of balancing the use of language with the actual context. It also means that inclusive language should not be adopted uncritically but must always be adapted to the people we are talking about. Sometimes it might be necessary to use language which highlights gender or other categories – for instance, to shed light on discrimination.

   In order to work against gender bias, the United Nations (UN) has produced a set of guidelines on gender-inclusive language in oral presentations and written texts. Below we present some examples of gender bias in language and suggestions on how to avoid it. While these examples do not present a complete list of how to use inclusive language, they help to reflect on the use of gender bias and the discriminatory use of language. A general rule is that if you are not sure what to call the person, then ask someone or the persons themselves what they prefer to be called. The examples are in English, but we encourage the reader to bear in mind the use of inclusive language in other languages too.[4]

Box 4.3   Examples of inclusive language

Man, manhood – People, human beings, humankind
Businessmen – Representatives, business people
Chairman – Chair, chairperson, head
Stewardess/steward – Flight attendant
Layman – Layperson, average person
Guys – All, everybody
Boyfriends/girlfriends or husbands/wives – Partners, spouses
A good pilot knows his daily routines – A good pilot knows the daily routines
The flight attendant should always listen to her colleagues – The flight attendant should always listen to their colleagues
Normal, able body – Persons without disabilities
The handicapped, the disabled – People with disabilities
The blind – People with sight impairment
Autistic child – The child has autism
Dwarf – Person of short stature
Retarded, slow person – People with cognitive disability

Inclusive language as well as gender scripts are approaches that can be used to recognize, respect, and include a broader spectrum of people in the processes of policymaking, planning, and design. These approaches are important in understanding what is at stake, not least when it comes to invisible and hidden imbalances in the acts of design and planning as well as how we talk about transport. Yet, there are other approaches to promoting a more inclusive transport system and one of these is the strategy of mainstreaming, which has a pronounced focus on action.

Gender mainstreaming

As mentioned in the introduction to this book, gender mainstreaming is a strategy which aims to move gender from the margins into the mainstream. Mainstreaming gender means integrating gender perspectives into all processes of research, planning, and policymaking. By including a gender perspective in traditional work and innovation processes, which might seem gender-neutral, the strategy aims to increase both gender equality and innovation.

The strategy of gender mainstreaming has been a flagship for promoting gender equality in the European Union as well as in Horizon 2020 research and innovation. Gender mainstreaming emerged as a new global equality strategy in 1995 at the Beijing Platform of Action during the Fourth UN World Conference. At the EU level, the notion was endorsed during the late 1990s and implemented in the Amsterdam Treaty in 1997. At European and global levels, the strategy of gender mainstreaming has been developed as an institutional method with a range of tools to identify imbalances and inequalities in processes where gender has so far been invisible or regarded as not important. For example, the strategy helps to uncover how resources are used, how some groups benefit from efforts more than others, or how approaches can hide gendered imbalances. Also, gender mainstreaming has been suggested as a tool for mobilization and participation and for addressing gender and diversity in new and forward-looking ways (Booth & Bennett 2002; Rees 2005; Rømer Christensen & Breengaard 2011).

The strategy of gender mainstreaming can thus be defined as having a dual focus on (1) the integration of a gender perspective into the content of various policies, products, and services and (2) addressing the issue of representation of women and men in the given policy area. As such, gender mainstreaming contains the two key dimensions of 'gender perspectives' and 'gender representation'.

The gender perspective

The gender perspective means including gender as a focus area or variable in all policy work, planning, design, and research. That is, both men's and women's concerns, needs, and aspirations should be considered and given equal importance (Rømer Christensen & Breengaard 2011). For example, as described in the previous chapter, there are differences in men's and women's travel patterns as well as in their choice of transport means. Studies find that these differences persist to some degree despite cultural changes in gender roles. Including gendered forms of

mobility in acts of planning as well as in research and policymaking will help to target different groups of transport users in more adequate ways. Knowledge about different target groups is also important in order to plan actions to overcome other societal challenges, such as the environmental problems of pollution and climate change (Angeles 2017). This is because various social groups may be concerned about or may experience the transformation to a more environmentally sustainable society differently. Thus, providing data on diverse actors is important.

Gender representation

Gender representation refers to a participatory-democratic dimension of gender mainstreaming that requires equal participation of women and men as well as the inclusion of other groups in society in political and public life. This includes the promotion of networking, dialogue, social mobilization, and the involvement of non-governmental organizations (NGOs) in all stages of policymaking and decision-making. The focus on equal representation is a response to the problem of gender imbalances in policymaking and decision-making. Since people tend to spot their own needs while not necessarily knowing about the needs of other people, a lack of wider representation in the various transport councils might easily mean that the diversity of travel needs is ignored (Rømer Christensen & Breengaard 2011; cf. Henriksson 2019). Homogeneity in decision-making, research, and planning tends to neglect the diversity in mobility needs and patterns of the population and promote an idea of 'neutrality' or 'one size fits all' approach. Gender quotas have been introduced as a fast track to achieving gender balance in policy and in company boards. However, the gendered imbalances in current European transport are reflected in research and policy committees, which still have a significant gender gap. For more on representation in decision-making, see Chapter 6.

Diversity mainstreaming

Along with the focus on gender, the EU has addressed multiple inequalities on a range of additional grounds. Over recent decades, ideas of diversity and the slogan of *unity in diversity* have been entwined with global discourse on human rights and theories of multiple discriminations. Today, Europe prioritizes the mainstreaming of both gender and diversity issues.

Diversity mainstreaming works along theories of intersectionality. As described in Chapter 3, intersectionality implies an analytical focus on the intersection of different social categories, such as age, ethnicity, disability, sexuality, and class (Crenshaw 1991; Lykke 2003, 2005; Ludvig 2006). Diversity mainstreaming means combining the inclusion of gender with other socio-cultural categories. For example, while women may have similar travel patterns, there are great differences within the group, women. Looking, for example, at diversity given the variables of gender and age, it is very likely that a 75-year-old woman will have different mobility needs and patterns than a 25-year-old woman; similarly, older and younger men have different mobility patterns and needs.

This picture becomes even more nuanced – and complex – when multiple variables are involved and crossed. The theory behind the work with intersectionality is that each intersection provides a new group with potentially different everyday needs and opportunities. This complexity produces a challenge to working with diversity in practice. To illustrate these challenges, let us give an example from our own research.

In 2020, we conducted a quantitative study of transport during the Covid-19 lockdown. The study took place in Denmark and Sweden and was representative of both contexts. The background and motivation for doing these surveys was an interest in the social dimensions of the Covid-19 pandemic in respect of mobility. In particular, we were motivated by the fact that the Covid-19 interventions especially addressed the population's use of public transport. The governments in Denmark and Sweden – as well as in most other countries – recommended that the public simply avoided or reduced their use of public transport. However, little was known about the impact of these recommendations on different social groups. We formulated this interest into two main research questions:

1 Do various social groups (gender, income, education, location, ethnicity) differ in their use of transport during the Covid-19 interventions?
2 Has the population (gender, income, education, location, ethnicity) changed their daily transport patterns during the interventions (lockdown)?

Not surprisingly, we found that the use of public transport had decreased during the lockdown while walking, biking, and, to an extent, car driving had increased. Yet, we also found that some parts of the population in Denmark and Sweden continued to use public transport. Based on the hypothesis that some social groups had less opportunity to avoid public transport in their everyday lives, we were now interested in finding out who those groups that remained dependent on buses and trains were.

We investigated the significance of gender, ethnicity, and age. Then we looked at income and locality. For each variable we included, we got a new picture. We had long conversations about what variables we should cross and what we could conclude at all. Our focus on diversity, using the intersectional approach, showed us that those who continued to use public transportation during the lockdown could not be narrowed down to a few social groups. It was both middle-aged people with middle-class incomes, who lived on the outskirts of the bigger cities, as well as young people with low incomes in the cities. The reason for their low income turned out to be due to the fact that most of these young people were students. In addition, there were urban city dwellers with above-average incomes who continued to use public transportation. All in all, these people were so different that it was impossible to find anything common in their transport needs and opportunities. Nor would it be possible to initiate any actions that would target them all.

What we learned from analysing our data on dependency on public transport was that the dependents were not a uniform group. Our intersectional crossing of social categories simply produced a large number of differences. We were not able

to conclude anything – at least from this study alone. This did not mean that our focus on diversity was a waste of time. Doing the intersectional analysis of transport dependency, we got an idea of the variables that were important and the intersections that could be interesting to look into further. This shows how gathering knowledge must often be done step-by-step, especially when the field of research or intervention is new, and we do not yet know where to focus.

Meeting resistance

Now we have several approaches to hand. We just have to start acting. Not that this 'just' is an easy task as it means that we need to rethink and adjust our traditional workflows and ways of thinking. Also, not everyone is willing to change their traditional ways of working, especially if they do not see any problems with the present work or even, for one reason or another, think that topics on gender and diversity are silly – or directly offensive to them.

   Gender is a subject that most people are invested in. Gender is very fundamental in defining our identity and has a great impact on how we understand the world. Most of us have grown up with a binary definition of gender in which individuals are either women or men. Although there are cultural variations in how gender is determined, there is general agreement that two different sets of meanings are attached to the two genders. When we start messing with these meanings, it affects our way of understanding the world. No wonder that people get confused, reluctant, or even angry.

Box 4.4   Experiencing resistance

As part of a larger data collection covering several EU countries, we published an invitation to participate in a survey on transport needs, gender, and diversity on a Facebook page:

> Gender, age, ethnicity, disability are some of the factors that affect our transportation needs. The question is whether the Danish transport system meets the population's different mobility patterns and needs. We would like to know more about that. We invite you to give your feedback.

We received various comments that showed a certain reluctance to engage in the data collection, especially in the subject of gender and transport:

> Age and disability for sure, ethnicity perhaps, but gender as influencing transportation needs?
>   Haha yes. Maybe there should be gossip magazines in the bus for women to bother driving it?

> How the hell can ethnicity affect one's transport needs – is this identity political research?
>
> Gender and transport? There are obviously NO limits to what one gets money for in research.
>
> It is not unusual to meet a certain reluctance to tackle gender, and people working in this field must be prepared for that. Yet, the comments are interesting since they hint at which topics people find acceptable. In the case of our study, age and disability were recognized as valid problems, while gender made people resist.
>
> Whether we ignore resistant comments or address them when they come up depends on the nature and context of the comments. Posts on Facebook, for example, are in a space where controversies can be quite fierce and different from what people would say face to face.

Often resistance is due to an assumption that gender equality is about making men and women the same. While this is a mistaken interpretation of equality, it often slows down action and even dialogue about equal opportunities between men and women. Yet, as we described in the section in the previous chapter on equality or equity, the goal of equality is quite the contrary to sameness. The misunderstanding is based on a confusion about the concepts and their counterparts, which means that the opposite of equality is thought to be difference. We need to understand how these terms are located in different spheres: for example, the legal sphere in which the counterpart to equality is inequality, and an ontological issue in which sameness is opposite to difference. While the first expresses a principle of similar treatment, the second has to do with the characteristics of individuals. By accepting these differences in terminology, it becomes clear that we can call for equality and diversity at the same time. The call for both has been the main driver throughout this book.

Another reason for resistance is related to the idea of power entitlement and loss of privilege. Here we are talking about a (often unconscious) fear of what happens to people's everyday lives if everything is turned upside down: 'Can I no longer drive my car?', 'Will I lose my position to someone just because of their gender?', 'I want to be hired on my qualifications and not because of my gender'. When we think about how our culture is structured around some relatively fixed notions of gender and their respective meanings, it is not surprising that people show resistance when this order is shaken. And although many actions will benefit the population broadly speaking, new and different priorities may mean that people who used to get a lot will have to share. The concept of transport justice and the need for an equal distribution of resources is a valid argument here together with solid data on who benefits from the actions.

Resistance can also be due to not recognizing the problem as a problem. 'I am not afraid of biking home at nights. It is really not a problem here'. As described in previous chapters, the way we understand the world is from our own point of

view. Here again, to overcome our one-sided approaches to what matters and what does not, we need knowledge. Collecting data is also about making it clear that not everyone has the same prerequisites for what is safe or accessible transportation.

Finally, another problem in achieving a game change in respect of transport might not directly be described as resistance, but rather as misleading expressions of products or actions, which is also seen in the form of 'greenwashing' – in this context 'gender washing'[5] or 'femvertising' (Sterbenk et al. 2022). In fact, a lot of actions aimed at combatting imbalances in the sector end only on paper. Many companies already have an action plan to promote gender equality and a more diverse working culture: it is written down and put on their website. Unfortunately, nobody uses it. Complacency at this point in the process can either be because companies think that they now have come quite far – 'the others do not have such an action plan' – or that they have to stop due to lack of resources: 'Enough is enough, we have already put too much money into this'. The answer, of course, is that text on paper only is a waste of resources. Companies will ask how much it costs to make transport inclusive and it blurs the perspective to assume that it does not need resources to work on issues of gender and diversity. On the other hand, we could also ask how much it costs *not* to make transport inclusive. Economic priorities are always a matter of short- and long-term goals and results. It takes time to change a culture and although there will be ongoing effects of gender action plans – for example, on the balance of employees or the users of transport services – most actions pay off in the long run.

While resistance might slow down the work towards equality, much resistance is understandable. Introducing gender (and diversity) in the transport sector does not have a long tradition. This is a new field and people working in the sector lack knowledge as well as approaches to cater for gendered differences in transport. All beginnings are difficult, as they say. Introducing gender to the field of transport is by no means an exception. In the box below, we have collected some examples of resistance which we have encountered ourselves in our work on gender and diversity in transport. The examples might serve as cases for what to expect when introducing gender and diversity in an organization. Moreover, we might also see these examples of resistance as lessons learned, that is, as observations we may include in future actions in order to improve the ways we collaborate with stakeholders. Hence, in the box, we also provide suggestions on how to approach the problems that we faced.

Box 4.5   Obstacles to action and suggestions for how to respond

1   Not all stakeholders see the relevance of gender or diversity in their field of work or agree on the defined equality targets.
    Response: A thorough and repeated introduction of gender and diversity ensures stakeholders' understanding of the subject and their will to move forward.

2 Lack of knowledge and expertise among stakeholders – little commitment to concrete actions.
   Response: Stakeholders need high-qualitative, available, and context-sensitive information about the local status of gender and diversity. It can be user statistics that highlight gender, age, income, etc., or data on experiences and attitudes. It can also be user portraits, input from interviews with staff, and more.
3 When working with various stakeholders, it might be a challenge to define a common strategy. This is intensified if stakeholders are competitors in the market.
   Response: Clearly state the benefits of the action. Solve problems together with stakeholders.
4 A tendency to equate the term 'gender' with 'women'.
   Response: Emphasize the diversity aspect and make sure that diversity is included in the work.
5 When initial visions and targets are too broad, it is hard to achieve an actual binding plan.
   Response: Problems need to be focused so as to work with them strategically.
6 Problems in succeeding in work on gender and diversity often derive from little ownership of the action plan.
   Response: It is crucial for the success of the actions to identify and maintain responsible institutions and persons.
7 Gender-blindness and gender neutrality are indicated in terms such as: 'What does this have to do with us? Women (and other less represented groups) are welcome, but they do not want to participate'.
   Response: Knowledge of the reasons why certain groups do not engage in the specific context. Collaboration with educational institutions could be a way to attract other groups of people. Job postings could be formulated differently.

Gender Smart Mobility

The last two chapters have presented theories, methods, and approaches to working with gender and diversity in smart transportation. We have argued for a context-specific approach to understanding and setting up actions towards greater gender equality. We have also pointed to the need in transport studies, policy, planning, and design to include the intersections of different categories, such as gender, age, and income, together with the different forms of mobility. As we argue, this more nuanced but also more complex approach is crucial if we are to take greater steps towards a more equal future transport sector. The various methods that we have presented can be summarized in the term *gender smart mainstreaming*, which signifies approaches that aim at Gender Smart Mobility. Gender smart mainstreaming of transport is described as the involvement of both gender and diversity

mainstreaming. Conducting gender and diversity mainstreaming of smart transport is thus a means to reaching Gender Smart Mobility.

Box 4.6   Gender Smart Mobility defined

SMART TRANSPORT
+
GENDER AND DIVERSITY MAINSTREAMING
=
GENDER SMART MOBILITY

We have defined five key dimensions of gender smart mobility: affordable transport, effective transport, attractive transport, sustainable transport, and inclusive transport. These dimensions are building blocks for the development of smart transport solutions insofar as they include the elements that are often central in stratifying people's mobility needs and patterns. As such, the five dimensions are set up to adjust for imbalances in policy and transport planning. Yet, it is important to highlight that the five dimensions are in themselves empty categories. They work as signifiers for where to direct our attention and to assist in setting up goals, but they need to be specified into indicators that can be measured. What inclusive means depends on who is in the target group, that is, inclusive for who? Affordable transport is a fluffy mission if we have no knowledge about the income of the people who use – or wish to use – the specific transport system. The idea behind gender smart mainstreaming is to move away from an implicit and imprecise starting point. We therefore need to be sure that we do not take it with us in our work on gender smart mobility.

Box 4.7   Questions for reflection

What is the balance between women and men in your workplace?

How many different ethnicities and ages are represented at your work?

Is there resistance to talking about gender and equality in your professional circle?

What forms of inclusive language could benefit gender equality processes in your work context?

Notes

1 See more at http://www.un.org/en/gender-inclusive-language/index.shtml
2 The use of inclusive language is supported in various policy documents such as the charter of Fundamental Rights of the European Union and in human rights treaties.
3 See, for example, https://www.and.org.au/pages/inclusive-language.html, https://open.buffer.com/inclusive-language-tech/, https://medium.com/diversity-together/70-inclusive-language-principles-that-will-make-you-a-more-successful-recruiter-part-1-79b7342a0923

4 These guidelines are inspired by the European parliament guidelines on gender-neutral language. http://www.europarl.europa.eu/cmsdata/151780/GNL_Guidelines_EN.pdf as well as the United Nations Gender-inclusive language guidelines http://www.un.org/en/gender-inclusive-language/index.shtml

5 https://theconversation.com/gender-washing-seven-kinds-of-marketing-hypocrisy-about-empowering-women-162777

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5 How to Do Gender and Diversity Action Planning

Gender and diversity mainstreaming in policy and practice

The idea of gender mainstreaming is about integrating gender considerations into planning and decisions at all levels, in policy and practice. By expanding the scope to encompass both gender and diversity, we present an intersectional approach taking into account not only gender but also age, (dis)ability, living situations, etc., as described in Chapters 3 and 4. Gender and Diversity Action Plan/Planning (GADAP) – a methodological approach we developed to ensure that the mainstreaming process will occur in practice – will be described below. Boxes 5.1 and 5.2 provide two good examples of what can happen when municipalities decide to focus on gender and diversity in local planning practice. Box 5.3 provide questions for reflections in the end of the chapter.

Box 5.1 Gender Budgeting

Example from the municipality of Boden in northern Sweden. A new contract for local bus transport using biofuel was a reason for new investment in local traffic; at the same time, there was a suggestion to promote school children's leisure trips by means of a new youth travel card for SEK 500 (appr. EUR 50) per year. A citizens' proposal was made by youths in the municipality, to improve public transport service to the equestrian centre and to a local recreation area on the outskirts of the city that had hitherto lacked bus service. Through these proposals, a *gender and diversity perspective* was added to the planning process, resulting in a more equal distribution of resources. The municipality of Boden undertook a *gender budgeting* of the investments and found that they favoured typically boys' leisure activities: 80% was spent on boys' sports, such as ice hockey, versus 20% for typical girls' leisure activities, such as riding. After the gender budgeting, more investments were directed to leisure activities for girls, and a decision was made to increase the bus service to the equestrian centre. This case was developed for the EU project TInnGO.

Box 5.2   Facilitating car-free travel choices among diverse groups

The second example comes from another European project, Cities4People, and it concerns promoting sustainable choices among all citizens regardless of gender, age, and ability. In Trikala, Greece, the local government decided to pedestrianize the streets around the main square by promoting walking and bicycling in the area. Some groups were identified as especially affected because they could no longer drive into the city centre. One group was people who could not walk around carrying heavy bags, especially older people going shopping and tourists who were now encouraged to travel by public transport. After citizen interviews, the city decided to provide smart lockers with code locks at the Information Point. The lockers seemed to have positive effects on the use of alternative means of transportation, since people who do not have to carry around bags are more likely to use bikes and buses.

Another problem was that persons with disabilities would have problems travelling by wheelchair in this area. Sustainable mobility means not only going green, but also taking care of vulnerable groups. Trikala's Citizen Mobility Community offered people with mobility impairments electric scooters that are attached to a wheelchair, transforming them into a three-wheeler that can cover longer distances faster. The Information Point is now equipped with one such scooter that people in a wheelchair can use for free and with no time restriction. Should the pilot be selected for scale-up, more pick-up/drop-off points may be added, and the scooter fleet may be increased. This pilot project is a good trial of facilitating car-free travel choices among diverse groups of people.[1]

Over many years of research, we have seen similar examples in several contexts of planners moving from gender-blind to more gender- and diversity-sensitive planning. This transition often requires systematic work, increased awareness of the various conditions faced by citizens, and methods and tools adapted to areas such as gender- and diversity-sensitive budgeting and increased use of knowledge gained from public participation. From previous research we also conclude that interaction between planning staff from different positions and with various experiences will benefit, both women and men can be experts on gender mainstreaming (Figure 5.1; see, e.g., Levin & Faith-Ell 2011, 2014; Levin 2015, 2019; Levin & Thoresson 2020).

The mainstreaming process and toolbox

Mainstreaming gender and diversity into transport policymaking, planning, and design is done using strategies that help keep an eye on the justice of these actions. Do these actions benefit various social groups? Do they also address marginalized

Figure 5.1 Workshop. Transport planning needs the experience of both women and men, it is also important to involve people of different ages and ethnic backgrounds.

Source: YURI ARCURS/Mostphotos.com (photo).

groups' transport needs, or do they appeal mostly to the general population, which is already mobile? As seen in the previous chapters of this book, with few exceptions current transport policy and planning tend to neglect gender and diversity issues. To understand the conditions and critical aspects of gender and diversity mainstreaming, we should recall that they involve power relations. Researchers have observed this in several contexts, for example, organizations, social practices, and institutions, and found that differences in power and influence are often assumed to exist between women and men (Connell & Wood 2005; Fainstein & Servon 2005). To be precise, institutions historically dominated by men (e.g., in the transport sector) reflect masculine norms and values, meaning that the male (e.g., travel) agenda remains the norm (see Levin & Faith-Ell 2019: 93–94; cf. Mellström 2002; Kronsell 2005; Balkmar 2012; Joelsson 2013). The European project TInnGO reported that women constitute only about 2% of entrepreneurs in transport infrastructure and mobility services, such as haulage, bus companies, taxi companies, and driving schools. In some parts of the Western world, more women have entered transportation politics and the planning profession, and in those cases, the main problem is not the numerical dominance of men, but the persistent dominance of male norms in the theories and principles learned in education and practised in everyday work (Hirdman 2003; Sandercock & Forsyth 2005; Forsberg & Lindgren 2015; see also Chapter 3 on gender norms and gender stereotypes).

Real adaptation to gender and diversity mainstreaming entails both using gender-aggregated data and understanding how norms and unconscious bias affect people, potentially reducing them to mere objects. To meet these challenges, we need to work systematically, and in previous research, we have suggested a relevant structure for the planning practice (see, e.g., Levin & Faith-Ell,

2019; Levin et al. 2020; Hvidt Breengaard et al. 2021). In the next sections, we will outline this structure and present methods for and examples of undertaking GADAP in practice.

Gender and diversity action Plan/Planning (GADAP)

A priority in the EU's and UN's efforts to promote gender equality is Gender Action Planning – or Gender Equality Planning – also known as 'GAP'. The TInnGO project, described in Chapters 1 and 2, expanded this methodology by incorporating an intersectional approach to include *gender and diversity* as well. Thus, GAP was expanded to GADAP. The argument for this is that planning, organizing, maintaining, and using the transport system are all gendered, while also intersecting with other social positions. This means that without an intersectional gender perspective, in which the gender perspective is combined with other considerations such as age, ethnicity, functional variation, education, and socioeconomic status, actions and measures will not be able to meet the various needs and interests of different social groups (Crenshaw 1989). Such a perspective is nowadays useful in scientific analysis as well as societal practice (cf. Carastathis 2014; and Chapters 3 and 4). For example, TInnGO set up ten local geographic hubs with stakeholders in 11 European countries: Denmark, France, Germany, Greece, Italy, Lithuania, Portugal, Romania, Spain, Sweden, and the UK. The hubs were organized around local contexts and addressed gender and diversity in relation to local problems. The related GADAPs addressed local targets such as public bus service, micromobility, bike-sharing schemes, and sustainable urban mobility plans (SUMPs). All of them aimed at increasing gender- and diversity-sensitive planning in these geographic areas. As the term implies, GADAP involves actions needed to achieve institutional change towards greater gender equality and diversity. GADAP contains several steps that include common mainstreaming tools, which are combined with other methods in an integrated process to achieve institutional change. In this way, GADAP can be an important method in work on gender equality and diversity. Moreover, the GADAP method applies a consistent structure that is used for systematic action and assessment in planning. GADAP mainly follows the structure of GAP. The procedure is widespread internationally in UN and EU efforts, and we present below the elements that drive such an action plan.[2] Overall, GADAP is an integrated planning tool with which to include gender equality and diversity considerations in a project, organization, or community. It is based on analyses of key gender inequalities and constraints that the project, organization, or community should aim to improve. Setting up an action plan is a context based activity that entails operationalizing goals, defining the targets and measures needed, and deciding how to implement actions, such as awareness-raising activities and campaigns.

GADAPs are set up to improve problems of inequalities with respect to issues concerning:

1 level of participation,
2 access to opportunities,

3 distribution of rights,
4 power to influence and make decisions,
5 incomes and benefits, and
6 control and use of resources.

Common objectives are to develop or deepen understanding of the issues of gender and diversity within an institution; to ensure that policy programmes and activities incorporate gender and diversity perspectives; to promote the consideration of gender and diversity issues at all policy levels; and to support staff in achieving a sustainable work–life balance. Setting up and implementing a GADAP involves several steps that help define the problem area, keep track of the process, and evaluate results.

These steps are usually spelled out in nine key elements and can be supplemented with a tenth element (i.e., follow-up actions), as follows:

1 a *vision* that defines the goal of the GADAP, such as the more balanced representation of gender and diversity in the institution, stakeholder group, or public participation group;
2 one or more *principles* stating the background or point of departure of the action plan, for example, human rights, gender equality, just mobility, and accessibility;
3 a set of *policy objectives* that refer and respond to gender equality goals at a broader level (e.g., the UN/EU, national, or local level);
4 the definition of *time-bound targets* of the action plan in the form of both short- and long-term targets;
5 formulation of the *outputs to achieve policy objectives*, that is, the planning and organization of activities;
6 definition and distribution of *stakeholder responsibilities*, so that it is decided who is responsible for each activity;
7 clarifying the appropriate *implementation mechanisms*, meaning both who to involve in the process (e.g., women's associations, gender equality networks or associations, and associations of older people or people with disabilities) and how to mobilize financial resources, reporting, and monitoring;
8 defining the *priority areas of actions* to reach the goal; these may be identified during a gender assessment or a broader social impact assessment focusing on just mobility and accessibility;
9 allocating the *resources needed* via budgeting and planning space and time for activities; and
10 *follow-up, evaluation, and revising* when needed.

These ten key elements of setting up and following up a GADAP are meant as an inspirational structural tool to guide actions and keep processes on track. Yet, it is crucial to define and adapt the action plan to the specific context, such as local organizations, institutions, businesses, and municipalities. Initiatives to address problems of inequality – the visions, implementation mechanisms, targets, questions,

and measures – must be specific to the target area and preferably defined in close cooperation with relevant stakeholders. In TInnGO, researchers, planners, and consultancies collaboratively worked out the focus areas in the local geographic hub context, so it was the local problems and challenges that were the basis for the actions. The focus areas were defined and refined in discussions at workshops and resulted in action plans, for example: for increased accessibility to the public transport service in Thessaloniki, Greece; for public involvement in public transport planning in Hannover, Germany; for bike-sharing schemes in Copenhagen, Denmark, and Linköping, Sweden; for more attractive and inclusive university education for women in science and technology in Vilnius, Lithuania; for gender- and diversity-sensitive SUMPs in Italy; and for networks and the recruitment of women entrepreneurs in transport in Romania. The practice will be further described below in the sections 'GADAP in practice' and 'Setting up a GADAP'.

Also, the initial phases of setting up an action plan benefit from establishing a basis for assessing the plan's success, which might be quantitative and/or qualitative and can, for example, be defined as

a   the percentage of women/men, girls/boys, younger/older people, and people from various ethnic backgrounds in a specific activity or target group;
b   the balance of questions and discussion topics raised by women and men in a work group, and to what extent the work or planning in the transport sector takes into account aspects of age and (dis)ability;
c   a template for how women and men, younger and older people, persons with disabilities, and migrants are portrayed or addressed in the organization;
d   the balance of power relations, for example, identifying who is the leader of a work unit or who is dominating a stakeholder meeting; and
e   the amount of resources (financial, etc.) distributed to women/men and other identified groups.

These considerations are meant to indicate whether the work processes are moving in the right direction or need to be redefined – that is, to concretize whether the action advances equality (see, e.g., Australian Aid 2013). When employing experts in a workplace or a specific planning project, one must of course not only consider knowledge and experience but also take gender and diversity into account. Homogeneous work groups and teams in which everybody has the same gender and background are not very creative. Diversity promotes creative work environments. In view of this, questions like these are useful: *How many women/men, juniors/seniors, people with ethnic minority backgrounds, etc., will be represented? Is it possible for people with disabilities to work on the project? Do we need to improve the accessibility of the project? What scope for action do people have?* When organizing public participation processes, to ensure acceptance and inclusiveness one must consider the balance of representation and power among different user groups and inhabitants: *How likely are different groups to participate? How will they be invited and how will their experiences be taken into account? Are there any defined groups that are neglected?* One can hold meetings at different times and places,

such as open-house meetings in shopping malls, walk-and-talk excursions along a new bicycle lane, or exhibitions and meetings at bus, tram, or metro stations. Often targets are defined too broadly in terms of 'we will plan for everyone' or 'we will provide equality for everyone'. We cannot plan for everyone without paying attention to the diversity within the group of people we intend to include in 'everyone', because we cannot plan for somebody if we do not know about their needs and abilities. Knowledge is crucial; effects, both intended and not, must be evaluated.

Equality versus equity and justice

The traditional way to measure gender *equality* is by counting people, i.e., the representational level expressed as 40/60, which means that the proportion of women or men should not be less than 40%. This is suitable, for example, when one is appointing members of a decision-making group or evaluating the number of people attending a consultation meeting. When it comes to dimensions such as affordability or accessibility, however, we need to detect differences *within* the population groups of men and women and consider how diversity is expressed as sub-populations and how it acts at the individual level. For example, low- and high-income groups might not have the same opportunities to choose sustainable living patterns, and new smart mobility solutions might be more affordable and attractive to those with higher income and education than to people with lower income and education. By applying an intersectional approach, we want to emphasize that not all women are disadvantaged and not all men are advantaged – the intersectional diversity dimension makes the scene more complicated as well as more oriented towards the concepts of *equity* and *justice*. Equality and equity have numerous possible interpretations, and one emphasizes that equality pays insufficient attention to differences among people, whereas equity directs more attention towards uneven playing fields and conscious remedial efforts, such as reallocating resources and adjusting rules to overcome existing barriers and differences in outcomes. Minow (2021) said that the concepts of both equality and equity 'can help illuminate deep problems in human societies, and both offer tools to make a different and better world – if those who share visions of change work together' (Minow 2021: 193).

Mainstreaming strategies contain a number of tools with which to address the gender dimension of actions.[3] While these tools have been developed for gender mainstreaming, they can also apply to diversity mainstreaming. Below we briefly present a few tools that facilitate the processes of mainstreaming gender – and diversity – within a given action.

Gender budgeting with an intersectional approach

Gender budgeting is an approach that sorts out how public resources are collected and spent, and who benefits from this spending. It challenges the biased assumptions of gender-neutral planning expressed in terms of treating everyone the same, or 'we plan for everyone' (see, e.g., Levin & Thoresson 2020). Many strategies assume that everyone benefits equally from a given action, since the action is seen as

'gender neutral'. Gender budgeting shows that this is not the case. Gender budgeting entails assessing all the processes of budgeting from a gender perspective. This assessment should clarify whether budgets are indeed gender biased, and whether one gender continues to be allocated more money than another. Based on gender budgeting, policy- and decision-making processes can restructure expenditures to better meet the aims of gender equality. In gender budgeting, it is relevant to apply an intersectional perspective to the analysis, including age, (dis)ability, and ethnicity, instead of generalizing simply in terms of women and men. For example, the municipality of Boden mentioned at the beginning of this chapter undertook gender budgeting and found that its budget for youth leisure activities was prioritizing typical boys' sports and that public transport was unavailable to reach the equestrian centre and a recreation area on the outskirts of the city. After gender budgeting, the municipality could better meet the mobility needs of diverse citizens according to their gender and young age. The same analysis could benefit other target groups, such as retired people, people with minority languages, people with disabilities, and, when applicable, also consider non-binary gender.

Gender impact assessment

Gender impact assessment is an ex ante evaluation or assessment of an action that seeks to estimate whether a current action will have positive, negative, or neutral consequences for equality between women and men. The gender impact assessment is therefore conducted before the action is implemented. The key question in conducting a gender impact assessment is whether the action reduces, maintains, or increases the equality between women and men and, if incorporating an intersectional approach, whether this also relates to diverse groups. Relevant questions are thus: *What are the challenges and barriers, and who is most concerned with them? Who will benefit from the modified, new, or improved mobility solutions?* Asking these questions makes it possible to reduce the likelihood of a given action having any negative consequences for various groups of women or men. The impact assessment procedure also must include suggestions for mitigation if the assessment identifies negative effects in the investigated area. In the case of smart transport, this entails mitigating negative effects on gender and intersectional diversity. If one does not conduct such an assessment in relation to a transport action, some groups might end up with even more transportation problems. For example, some might feel the negative effects of an automated tramway or highway in their neighbourhood, some might face insecurity and be subject to harassment at crowded bus stops if the space and security devices are poorly designed, and some might not have an opportunity to safely go to school or leisure activities if cycle lanes and pedestrian areas are downgraded or neglected.

Gender statistics

Gender statistics are those that highlight the differences and inequalities between women and men in various areas of life. Gender statistics have the following characteristics: (a) the data are collected and presented disaggregated by sex as a primary and overall classification; (b) the data capture gender issues; (c) the data

are based on concepts and definitions that highlight the diversity of women and men in different areas of their lives; and (d) the data collection methods consider stereotypes as well as social and cultural factors that may induce gender biases. To promote equity (i.e., diversity), gender statistics should also be related to other categories such as age, ethnicity, (dis)ability, education, economic and living circumstances and, when applicable and possible, record data on non-binary and other gender identities and expressions. Statistics are ideally collected both at the beginning of a GADAP process, to establish a baseline, and during the planning process to discern the direction and promote change in the right direction.

Stakeholder and citizen consultation

Stakeholder and citizen consultation is important to ensure that any action targets the exact area of interest. If actions are too broad or 'fuzzy', they will be difficult to implement and there will be problems maintaining the involvement of those implementing the action. Gender and diversity awareness in stakeholder and citizen consultation is oriented towards evidence-based and participatory forms of decision-making and targets the public and groups of individuals concerned with a specific activity or planning process. Gender- and diversity-sensitive stakeholder and citizen consultation promotes the participation of women and men, various professions, people of different ages, families, and people with disabilities in policymaking processes to ensure that their experiences and needs are reflected in the action. As such, gender- and diversity-sensitive consultation focuses on the engagement and participation not only of both women and men, but also of marginalized groups and people traditionally excluded from decision-making processes. It also entails involving relevant civil society organizations and gender experts in decision-making processes.

GADAP in practice

GADAP uses the mainstreaming tools presented above. How? The GADAP process has two parts: first, it offers a structure for establishing an action plan that addresses a defined need or problem; second, it connects to the five overarching Gender Smart Mobility dimensions, establishing criteria for equal access to transport solutions and together capturing the areas to be taken into account in planning and implementation. These dimensions are *affordability*, *efficiency*, *attractiveness*, *sustainability*, and *inclusion* (see further in Chapter 2). The dimensions must be specified in relation to the local context and target group. It is important to critically consider, for example, how a given planned transport solution can be inclusive, sustainable, affordable, effective, and efficient for different groups. At the same time, all five dimensions might not be crucial in all local contexts. Examples of the work procedure will be presented below.

First we will present two examples of how national hubs from the TInnGO project, in Spain and Germany, identified how the gender and diversity smart dimensions can be incorporated into public transport. The ten hubs in the 11 European countries mentioned at the beginning of this chapter were organized as living labs where researchers, policymakers, and practitioners worked together to develop and enhance gender and diversity mainstreaming in local geographic contexts.

Example – Spain: Promotion of gender equality and diversity in employment in the public transport sector in Spain (source: TInnGO hub workshop 2020)

The public railway transport provider in focus is a company originally led by the military. For this reason, the company still has a high percentage of male employees and the internal promotion processes might indirectly benefit male employees. Since the company is strongly committed to achieving gender equality, it developed a gender action plan to face this challenge. In this sense, the company is interested in improving the current gender action plan to include more employee diversity. The GADAP in this case aims to propose new key performance indicators that will ensure equal job opportunities for all employees.

Gender Smart Mobility in this context is translated as a gender-equal railway sector. The focus is especially on ensuring equal opportunities for women in the railway sector, which today is male dominated. This goal is defined in accordance with the following dimensions:

- *Affordable*: The modification of internal promotion processes is cost-effective as well as ultimately beneficial for the company. Efforts to recruit and promote more women workers are mostly related to changing habits rather than adapting to facilities or infrastructures.
- *Effective*: A more diverse workforce will encourage the development of alternative ideas to be translated into new solutions for railway and subway transport.
- *Attractive*: Including a gender perspective in the internal promotion processes will make the transport sector more attractive to groups not currently represented in the sector.
- *Sustainable*: An integrated, egalitarian, and diverse team of employees might establish new measures to encourage and increase the use of public transport.
- *Inclusive*: The proposed measures for internal promotion are bias free, since they do not depend on gender, nationality, or other diversities.

Example – Germany: Gender- and diversity-sensitive participation culture and gender- and diversity-sensitive data collection and evaluation in the region of Hannover, Germany (source: TInnGO hub workshop 2020)

For successful gender- and diversity-sensitive mobility planning, it is important to obtain an overview of the user needs of various and above all diverse groups. In most cases, however, this requirement is not met due to the lack of external communication and also lack of access to the target group. More specifically, children, girls, elderly women, and/or people with special needs cannot usually make themselves heard during the planning process, as they are not offered adequate opportunities to participate that are adapted to their needs. To counteract this, the focus of the German Hub is on conceptualizing and strengthening the participation culture and, in the course of this, also on evaluating mobility data with regard to gender- and diversity-specific issues.

Gender Smart Mobility is, in the context of the German GADAP, translated as 'gender- and diversity-sensitive participation culture and gender- and

diversity-sensitive data collection and evaluation', defined in accordance with the following dimensions:

- *Affordable*: Participation is enabled by means that the user group already owns (e.g., smart devices and social media) or by means made available to the user group (e.g., devices provided at bus stops).
- *Effective*: Especially via social media, a wide variety of users can be addressed, such as younger to older women, women in different life situations, women of migrant background, and networks of diverse users.
- *Attractive*, *sustainable*, and *inclusive*: The easier access to participation is designed to be (i.e., the more participation channels there are and the more location and time independent it becomes), the more people (e.g., younger to older women, women in different life situations, women of migrant background, and networks of diverse users) can participate and the more input will be gained for mobility planning processes and the more Gender Smart Mobility will be promoted in the long term.

Setting up a GADAP

To establish an action plan, it is appropriate to invite the actors involved to a workshop or working meeting with latitude for creative discussions (see the above section on stakeholder consultation). As mentioned before, the method is more likely to succeed if the actions correspond to actual problems in the context in which they are being implemented. Also, addressing gender and diversity unsurprisingly requires expert knowledge. It is therefore crucial for success that someone be on board who has acquired knowledge of how gender and diversity are spelled out in society and, specifically, in the transport system. Setting up a GADAP follows a stepwise approach, and it is important to show, step by step, what problems are to be solved, what activities may be suitable and when, what method can be used, and, finally, who is responsible for the activities and how they should be followed up.

We suggest that the ten key elements presented above in this chapter should be used as inspiration and to structure the work. First, set an agenda with points to be discussed and define the baseline and outcomes during the initial workshops or work meetings. It is very difficult to formulate an action plan if the target group and available resources are unknown. These preparations are fundamental to success, and the better the preparation, the better the action plan. Preparation also requires that the 'right' people are invited to participate, i.e., those who have access to and knowledge in the area, those who are responsible, and those who can allocate resources. Preparatory work is also needed to delineate the area to be discussed. If the workshop concerns, for example, public transport in a particular city area, it is appropriate to look at previous travel surveys, reports, and research on various groups' use of public transport and how aspects of gender and diversity have been treated. Find data from the local context, and if more knowledge is needed, interview people such as key stakeholders and citizens. This preparatory work should be presented at the workshop as an introduction to the ensuing work. The more

preparatory work that is done, the easier it will be for the participants to take on the different steps of an action plan.

Agendas should be set for the workshops or meetings allowing enough time to discuss each step. The fact that time is not only designated but also limited makes the work productive. During a preparatory workshop, it is important that proposals be made concerning each point (e.g., defining the problem, articulating the vision, and allocating resources). The proposals should be assessed in terms of gender and diversity and can later be evaluated to see what is possible and reasonable based on available resources (see more about the assessment method in the above section on gender impact assessment). The workshops are also a place to clarify how the selected area meets the five overarching dimensions. This should be done by determining to what extent and how the area is or can become affordable, efficient, attractive, sustainable, and inclusive for the targeted groups. Central to this work is moving from general policy objectives on planning for all, to context-specific plans for gender and diversity mainstreaming, which should identify and address the interests and needs of the users and potential users of planned measures and mobility resources. In fact, the translation from *general* to *context-specific planning* is what enables a shift from *gender-blind* to *gender- and diversity-sensitive planning*. In the next section, we will describe and discuss an example of setting up and undergoing a GADAP process. The example comes from the Danish-Swedish hub and describes a GADAP that was set up to target and improve inclusive cycling courses for migrant women in Copenhagen. In cities as Copenhagen, Denmark, and Amsterdam, the Netherlands, cycling is a common transport mode (Figure 5.2), however not all citizens can cycle. The background is an identified need among local

Figure 5.2 In cities like Copenhagen and Amsterdam, many people see cycling as attractive.

Source: IVAN TYKHYI/Mostphotos.com (photo).

Table 5.1 Example GADAP: Inclusive cycle courses in Copenhagen

Geographic area	*Copenhagen, Denmark*
Subject area	Inclusive cycling courses for migrant women.
Problem and challenges	Cycling courses only reach some groups of immigrant women.
	Some participants drop out before finishing the cycling course.
	Some participants do not continue cycling after completing the course.
Overarching goal/vision	Cycling courses will be welcoming for everyone in the target group, regardless of background, labour market position, or living area.
	Cycling courses will meet the participants' everyday mobility needs. The cycling courses will motivate more adults to learn to cycle and cycling will be maintained after completing the course.
Possible actions and measures	Advertise in more languages and places.
	The participants will receive a diploma after the course.
	Make the course a social event, for example, by offering tea and coffee after each lesson.
	Arrange social events, such as cycling excursions, for former participants.
	Set up collaboration with local bicycle kitchens/mechanics to get help with repairs.
	Train former participants to be instructors.
Local indicators (specific to this GADAP)	Balanced representation of participants of different ages, ethnic backgrounds, professions, and areas of residence.
	More women from ethnic minority groups who have so far not participated in courses.
	That 85% of the participants complete the course.
	That 90% of the participants continue to cycle after completing the course.

and regional actors to increase the possibility of cycling in groups that have not learned to cycle and that may even come from cultural contexts in which cycling is considered inappropriate for women (Breengaard et al. 2021; cf. Pedalista, 2017).

The action plan is presented in Table 5.1; Table 5.2 shows how the relationships with the five dimensions were refined in this action plan.

Data are needed in order to understand the status of the transport system and its various actors (e.g., travellers, employees, and staff). Data are not an end in themselves but are among the main devices that can be leveraged to inform decisions. Collecting better data on various users is the first step towards a more inclusive transport system. Therefore, methodologies and systematic work processes to collect and analyse data and increase knowledge within the planning and implementation of transport systems are essential. To choose the mainstreaming tool or tools that fit the specific target is also essential (cf. the examples on gender and age, and disability, at the beginning of this chapter and examples in Chapters 3 and 4). When connecting to the five dimensions, we have shown not only how they can be used, but also how they should be used, since they are empty if not defined closely in relation to the target.

Yet, as also was described in Chapter 4, the goal of gender and diversity mainstreaming can meet resistance – which is often due to a misconception of gender equality that is about making men and women the same – while the aim of the

Table 5.2 Example of how a concrete GADAP can be connected to the five overarching gender smart dimensions

Gender smart dimensions	GADAP Copenhagen Denmark
Affordable	Cycling is often regarded as a cheap form of mobility. However, bicycles are not 'cheap' for people with low incomes, not all immigrants know how to buy second-hand bicycles, and maintenance can be quite expensive. Participants can be informed about how to buy affordable bicycles and might also receive help with bicycle repairs.
Effective	For the course to be effective, participants must attend as much as possible. To ensure participation throughout the course, pay attention to certain obstacles facing the group; for example, it might be an idea to set up parallel childcare – or even parallel cycling courses – for women with children.
Attractive	In Denmark, many people see cycling as attractive. However, be aware of cultural contexts in which cycling is considered inappropriate or unwanted. Defining cycling as a healthy, active, and flexible form of mobility might attract people from non-cycling cultures.
Sustainable	Cycling is only sustainable to the degree to which it is actually done. Course instructors could ensure that participants maintain their new biking habits by arranging post-course cycling tours to maintain the new cycling habits.
Inclusive	Everyone in the target group must have the opportunity to participate in the course. For every course, assess the participants in terms of gender, ethnicity, age, place of work or study, and living area. Did the course include everyone in the target group?

gender and diversity mainstreaming process is quite the contrary of sameness. We argue that an emphasis on variations and diversity among users, stakeholders, entrepreneurs, and employees in the transport sector means the opposite of sameness. People are different in many ways but are worth equal and just opportunities and treatment, and to understand how to 'plan for all', we need to identify and address the interests and needs of the users and potential users of planned measures and mobility resources. In that way, the translation from general to context-specific planning is what enables a shift from gender-blind to gender- and diversity-sensitive planning, and to reach the aim of *Gender Smart Mobility* (cf. Chapters 1 and 2).

This methodology chapter[4] raises an issue seldom considered in mainstream transport planning. It shows that the responsibility for gender equality and diversity and the related indicators might be placed not only on different actors, in these cases, on local actors, but in the long term also on national decision makers and on collaborations between countries (such as the EU Commission and Parliament) to drive and monitor progress. The five overarching dimensions (i.e., affordable, effective, attractive, sustainable and inclusive) can be managed at the local, national, and international levels, depending on what the targets are. If the target is increased gender equality and equity in public transport in a regional context, or bicycle training for a local target group, the dimensions will be best managed by regional or local planners. However, in the long term, the sustainability dimension refers to

development goals formulated by the United Nations 2030 Agenda, which might be more diffuse and challenging for local actors, so the responsibility needs to be taken by higher levels.

Summing up

In this chapter, we have highlighted that to succeed with the GADAP procedure, active preparatory work is required, as well as continuous follow-ups and updates of the action plans. A success factor is whether someone with insight into the subject area leads the local-level work. Today, professionals in the field of transportation often lack knowledge of gender equality, equity and social justice. This entails an imminent risk that the technical planning perspective might continue to dominate planning and that generalizations might be made about men and women based on deep-rooted norms and on existing travel and employment patterns (Kronsell 2005; Lindqvist Scholten & Joelsson 2019; Kronsell et al. 2020; Priya Uteng et al. 2020). This problem is linked to the need to systematize gender equality work in the transport sector and to adopt an intersectional approach taking account of both gender and diversity.

We propose that responsibility for the governance of gender and diversity mainstreaming should be more clearly defined by transport authorities and that resources should be allocated for working on related knowledge-raising activities and following up on the work throughout the transport sector. This could be done, for example, by establishing positions of gender equality and diversity strategists within the responsible authorities and companies and by introducing a more systematic methodology for training policymakers and planning staff in gender and diversity matters.

Box 5.3   Questions for reflection

What might be the result if we do not consider gender and diversity in transport planning?

Why should we include people of various genders, ages, ethnic backgrounds, abilities, and living situations in public consultations? How do we reach people and gain access to their experiences?

Why is an even distribution of women and men and co-workers with diverse backgrounds preferable in work groups and planning projects? See also the 'gendered connotations' related to professions, which are described in Chapter 4.

Notes

1 https://cities4people.eu/2020/11/05/smart-storage-locker-stations-and-wheelchair-scooters-in-trikala/
2 More information about setting up a GAP can be found at EIGE: https://eige.europa.eu/gender-mainstreaming/toolkits/gear/what-gender-equality-plan-gep and https://eige.europa.eu/gender-mainstreaming/toolkits/gender-institutional-transformation/step-11-launching-gender-equality-action-plans

See also the UN: http://gender-chemicals.org/what-is-a-gender-action-plan and https://unfccc.int/topics/gender/workstreams/the-gender-action-plan

3 More gender mainstreaming tools as well as detailed descriptions of all tools mentioned here are available at EIGE's website: https://eige.europa.eu/gender-mainstreaming; see also EIGE's publications on gender mainstreaming, including tools: https://eige.europa.eu/publications?a%5B%5D=616&a%5B%5D=616

4 The GADAP methods and tools described here have been developed in research and practice. The GADAP methodology was reviewed and practised in the European H2020 TInnGO project, 2019–2021 (supported by grant no. 824349). The GADAP development was led by the authors of this book and our colleague Malin Henriksson, VTI. The method was tested step wise in collaboration with the participants in the 10 national hubs.

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6   From One to Many Tracks

Methodology and Data Collection for Gender Smart Mobility

The power of data – What gets counted counts

Transport data are of vital importance for planning, policy, and practices. Knowing how to find, collect, analyse, and communicate data is of increasing importance not only in transport analysis, but also in many areas of present-day society. This development has made ownership of data pivotal, along with access to IT equipment, resources, and expertise (Thylstrup & Veel 2017). Transport data are not only vital for the development of policies and practices, but they also form the basis of real interventions which have lasting effects on various citizen groups, their well-being, and their means of everyday mobility. Gender Smart Mobility – as outlined in the first chapters of this volume, indicators and performance measures have been vital to the development of both sustainable transport and gender equality more generally. The Gender Smart dimension presents new perspectives in the field of data collection, which could be developed further in order to comply with the complex demands and challenges to transport and mobility today. The Gender Smart Mobility idea and indicators brings the two fields of transport and gender equality together and allows for new synergies and intersections between them. It opens a policy window for Gender Smart Mobility to be fully integrated into future gender equality and transport strategies.

The prevailing data collections that are available on citizens' mobility are scarce both at European and at global levels. In general, data provision in the field of transport and mobility today still lags behind data collections in other vital areas such as the family, the workplace, health, and education. Data in these areas are collected by national statistics and global forums on a continuous basis. Such data are, for example, published annually in the Global Gender Gap Index and on an ongoing basis in the Gender Equality Index launched by the European Institute for Gender Equality (EIGE 2021). There is a pressing need for data provision in the field of transport, and for recognition that evidence of inadequate transport systems means that, in particular, women's access to education, economic opportunities, and healthcare is restricted. Data are badly needed to feed into fresh approaches and better solutions for all.

The types and means of mobility are called 'modalities' or modal shifts in transport expert terminology. In principle transport modalities cover all forms

of transport, such as air, road, rail, and sea-maritime. Yet, national transport data tend mainly to cover motorized transport – be it private or public. In some countries, various sub-forms of transport have also entered the national travel data – for example, motorbikes, scooters, and bikes of various types. More recently, walking has been included as part of the modality landscape. One can say that 'what gets counted counts', and the modalities that are most intensively covered by existing transport data are also the most dominant and valued. Therefore, motorized transport, in particular cars, takes centre stage in existing data collections, and this forms the basis for infrastructure plans and investments (Christensen et al. 2017).

Amid the notion of Gender Smart Mobility that recognizes gender and other categories as important for individual mobility, there is a persistent lack of consistent and detailed data at local, national, European, and global levels. As we have seen throughout this volume, gender makes an important difference in terms of needs and practices in various modes of transport. Studies continue to show that men's travel patterns still turn out to be more linear and car dependent compared to women who take more 'messy trips' (European Parliament 2021). Yet, as we have seen, context is highly relevant in transport and in assessing better and equal conditions and access for all. Variation exists across nations and regions and matters, in terms of practices, in social, gender, and cultural terms; such variations need to be taken into account in order to provide data as a stepping stone for change that meets the visions of gender smart transport.

In the following, we present a suite of collected examples of how one can use existing data resources, or create surveys, to consider gender and diversity perspectives – or the lack of them. Before doing so, we will take a detour into the broader lines and history of transport research. This will provide a backdrop for understanding some of the key notions and shortcomings of current data collection. We will also provide a set of alternative routes for data collection and studies if change is to happen in the field of transport and mobility for broader constituencies.

What's the problem?

> I think there are many at the Swedish Transport Administration who are engineers and thus, the culture is like engineering culture. We probably have many other professions as well, but the culture is engineering culture. Then you want to measure, you want a little sample, you want little neat tables.
>
> (Singleton & Magnusdottir 2021)

In her influential work on the construction of policy problems, the political scientist Carol Bacchi (1999/2013) argued that dominant policymaking concepts are often marked by common sense; they apply a simple 'problem-solving' paradigm which assumes that 'problems' can be identified as hard evidence and that they are objective in nature. Bacchi suggests a critical methodology of identifying 'problems' described as a 'What's the Problem?' question. Asking this question in

respect of the subject of transport means scrutinizing the dominant perspectives – or discourses – in this field and also to come up with notions of how things could be done differently. It becomes obvious that transport research and planning have historically been characterized by a preference for so-called hard evidence as stated in the opening quote above, which is from a civil servant in the Swedish Transport Administration.

Modern transport research took off during the period immediately following World War II and became influenced by the then optimistic belief in quantitative cost benefits and rational (choice) approaches to rebuilding and developing post-war societies. In many parts of the world transport policy – understood as planning, production, and politics – has followed this particular discourse of technical expertise which, when it comes to gender, has been closely connected to a certain type of masculinity. As we saw in Chapters 2 and 5, it is a discourse which values technical knowledge and technical rationality related to transport infrastructure and the development of vehicles. The belief in technological rationality is enduring and is currently visible in the high regard in which electric and autonomous vehicles are held. They can be seen as part of the 'technological fix' and the promise of technical solutions to sustainability that will not demand changes in the habit of individual car driving.

Norms in this discourse derive from engineering, economics, and certain branches of psychology. It is a cost–benefit model that favours large-scale and centralized solutions and technologies where the benefits are measured in terms of time and money and to the extent that they contribute to economic growth and employment (Mulley 2022). Even in Denmark, branded as a biking friendly country, current infrastructure plans are forecasting huge investments in highways and new bridges to ease congestion and motorized connectivity (Transportministeriet 2021). Denmark is a small country, where an elaborate network of highways already provides easy accessibility to most parts of the nation. At the same time, investments in public transit have lagged behind for decades. Denmark, which is routinely branded as a bicycle country, does not really prioritize biking in terms of investment, city planning, and tax policies.

The notion of rational choice and behaviour that pervades data collection in transport is a logic that focuses on a type of behaviour where all individuals are assumed to make rational choices with the aim of maximizing subjective interests. In addition to poor research horizons and narrow data collection, it means that policy and implementation processes ignore the affordances and diversity of residents and users of various transport modalities and mobility choices (Mulley 2022). We see this as an incremental model that tends to reproduce stereotypical ideas of technology, infrastructures, and transport vehicles (Petracca 1991; Jensen 2015). A side effect of this embeddedness is that it operates with a subtext of the nuclear family and male-breadwinner model as well as a car-centric and motorized approach to daily mobility.

An increasing number of scholars have opposed this prevailing ethos of individual choice and the 'behaviour change' paradigm, developed in certain branches of psychology. Following feminist criticism, such plans and projects prioritizing

individual motorized mobility are not only detrimental to gender equality but they are also rooted in a traditional approach to the Anthropocene, including human impact on the earth. A relation that has been labelled as an unhappy marriage between globalized corporate hegemony and possessive individualist masculinities, based on views that see nature as a free resource to be exploited (Kronsell et al. 2020; Walton 2020). Big infrastructure projects require the expropriation of large scenic areas and islands, which then become car corridors rather than recreational or agricultural areas.

The well-known Anglo-American mobility scholars Sheller and Urry (2016) specifically question the *soft change* approach, which assumes that the practice of encouraging or nudging rational actors can make individuals think and behave in a more sustainable manner. This dominant model of behaviour change is based on the paradigm of ABC – an Attitude, Behaviour, Choice approach. In line with feminist scholars, they argue that the ABC paradigm often narrows the scope to existing practices among car drivers and excludes new and more complex sustainable practices.

If we take the diversity of the population into account as well as the multi-dimensional meanings of transport, the ABC model is too simple and not likely to create real changes in habits (Schwanen et al. 2012). In an alternative note, Sheller has suggested a new 'emotional turn' in the approach to the study of how different people cope with everyday mobility. In this 'turn', more attention should be paid to emotions and feelings that are embedded in patterns of daily mobility instead of solely treating people as 'rational actors' who are supposed to make carefully reasoned economic choices. Following Sheller, research is needed to look at the lived experiences of dwelling with cars and other transport modes in all their *complexity, ambiguity, and contradiction* (Sheller 2004). Currently, the public interest in and priorities of climate policy have opened up new avenues of connecting, for example, active transport such as biking and walking with health and sustainability. At least at this rhetorical level, parts of current transport and mobility policy invite such a game change in both transport survey and planning methodology as well as in the vision regarding daily mobilities.[1]

Box 6.1   Social Science should engage with problems rather than behaviour

'Useful social science … should be that which engaged with problems like those of understanding the details of path dependence, the spatial and temporal configuration of innovation junctions … or the potential for aligning and modulating elements of social practice. In such a framework … the efforts to draw generic behavioral conclusions would be largely irrelevant in that they necessarily fail to capture vital processes of social change' (Shove 2010: 1279).

Transport surveys – What they tell us and what they don't tell us

The dominant approach in data collection and transport analysis still adheres to the hierarchical paradigms and principles of the post-war era. As we elaborated in previous chapters, the mainstream operation of city, regional, and national transport planning works from 'value-neutral' and 'people-neutral' assumptions. These 'neutral' approaches are commonly based on rational choice thinking and a prioritization of motorized mobility.

In the following, we provide a range of examples of existing surveys, and how they can be used to extract relevant information – in spite of limitations and data gaps. We also aim to provide examples of new practices that may contribute to improving the quality of the data as a potential for new approaches and practices.

Eurostat and Eurobarometer

The first example is the transport data provided by Eurostat and Eurobarometer. Eurostat is the central statistical office of the European Union with the mission to provide high quality statistics and data on Europe.[2] Unfortunately, the available transport data on how European citizens move around are poor. Still in 2021 there are no continuity or harmonized periodic surveys on the mobility of European Union citizens (European Parliament 2021). Another data source at the EU level are the infrequently collected Eurobarometer surveys. From time to time these provide gender-disaggregated data; yet the most recent survey has provided data at the EU level only and not for the various countries or regions, as shown in Figure 6.1.[3]

These figures demonstrate the general insight that there are gendered differences in transport patterns and needs. But unfortunately the statistics available in the field of transport do not cover this policy area adequately when it comes to gender or other social categories. At the European level, serious data gaps remain in the available statistics which have consequences for both politics and research and innovation. So planners and politicians have to rely on limited sources from various national transport surveys and infrequent international comparative research. Even though these figures demonstrate gendered differences, they do not provide a solid data basis for useful political interventions because regions and national particularities are omitted.

The Danish National Travel Survey

The second example is the Danish National Travel Survey which counts as a model when it comes to the collection of diverse and detailed transport data.[4] National travel data have been collected since 1975 in Denmark, and over the years, these have been extended to include more details and case studies. In contrast to the poor data at European level, the Danish survey, which started in 2006, includes multiple modalities; car drivers, cyclists, and walkers are included. Also gender-segregated data are presented and details can be provided in specific areas. The broader and deeper survey method was introduced in recognition of the more complex travel

On a typical day what is your main mode of transport? Is your main mode of transport used in combination with … ? (multiple answers)
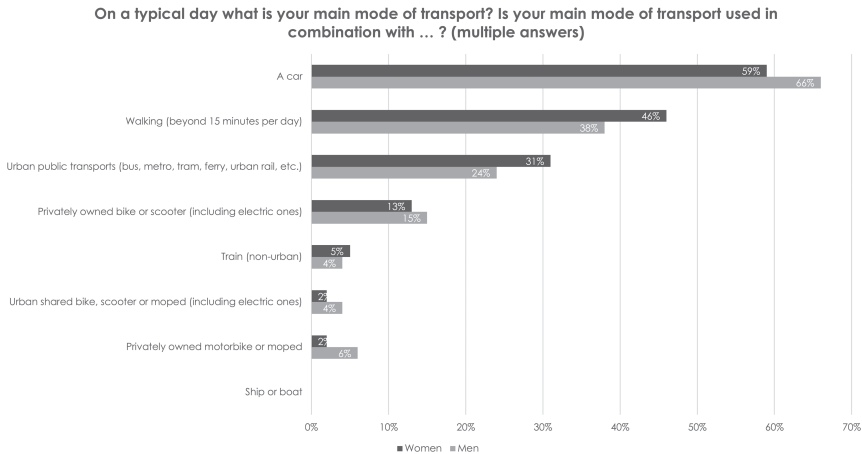
Figure 6.1   A Eurobarometer survey in 2020 showed that the car is the most frequently used option for both women and men in EU Member States. EU women use walking, urban public transport, and non-urban trains more than EU men, while EU men more often use individual means of transport including cars, bikes, mopeds, and scooters. Women favour walking and public transport when they do not need to rush to combine work and family commitments.

Source: Eurobarometer (2020). Here reproduced with permission from Silvia Sansonetti from https://www.europarl.europa.eu/thinktank/en/document/IPOL_STU(2021)701004

Source: Title: Women and Transports Authors: Silvia SANSONETTI, FGB SRL SB Eamonn DAVERN, Independent Expert. This is Figure 1 at page 19.

modes in the twenty-first century and the need for knowledge-based policymaking. The Danish National Travel Survey is based on both survey and qualitative/structured qualitative interviews and counts as leading in terms of the scope of data collection.[5]

A simple, yet clear visualization of gender differences was provided in 2013 and showed a gendered division of car drivers when compared with family situation in Denmark. Men were more often car drivers than women; single parents with children were nearly equal car drivers, while significant gender differences were revealed both among single people and among couples without children. Families with children were the most frequent car drivers; they mirror a general trend in the landscape of motorized mobility.

At present the Danish National Travel Survey issues annual reports which include various visualizations and statistics. In Table 6.1, current transport modalities have been contextualized. The travel survey shows the purpose of the trip – for example, work, accompanying children, or relatives shopping. Here the data provide details which feed into and make visible the 'messy' trips and mobility for care as well as for work and other purposes where we still find marked gender differences. (Christiansen & Baescu, approached 12.1.22).

Table 6.1 Gender, journey, primary purpose. Denmark 2021.

	Share of journeys		Share of mileage (PKM)		Share of travel time	
Journey primary purpose	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**
Workplace (commute)	15.0%	17.5%	24.3%	31.2%	17.6%	22.3%
School/educational	4.7%	5.5%	3.6%	2.2%	4.4%	3.6%
SUM Commute	**19.7%**	**23.0%**	**27.9%**	**33.4%**	**22.0%**	**26.0%**
Escorting to/from activity	5.0%	3.4%	2.4%	2.4%	2.8%	2.2%
Escorting to/from transport	1.1%	0.5%	0.8%	0.6%	0.6%	0.4%
Collect/bring objects	1.6%	3.0%	0.9%	1.9%	0.9%	1.7%
Shopping	19.5%	18.5%	8.9%	6.3%	10.5%	8.7%
Social/health	3.4%	2.5%	3.8%	2.3%	3.5%	2.3%
Other errand	1.4%	**1.3%**	1.2%	0.7%	1.2%	0.8%
SUM Errands	**32.2%**	**29.3%**	**18.8%**	**14.4%**	**20.1%**	**16.5%**
Visit family/friends	11.5%	10.2%	23.4%	15.1%	15.6%	12.6%
Do sports	3.5%	4.6%	2.1%	2.5%	2.3%	3.2%
Entertainment (incl. Church)	4.5%	4.5%	6.5%	4.4%	5.7%	4.7%
Allotment/summer cottage	0.7%	0.6%	3.8%	3.0%	2.0%	1.9%
Leisure round trip	20.9%	17.8%	4.8%	3.4%	22.8%	18.2%
Holiday, excursion	3.3%	3.2%	5.6%	5.2%	5.0%	5.5%
Meetings in private context	0.7%	0.7%	2.0%	0.7%	1.2%	0.6%
Other leisure activity	1.4%	1.4%	1.6%	1.8%	1.3%	1.9%
SUM Leisure	**47.3%**	**43.9%**	**50.4%**	**37.3%**	**56.4%**	**49.7%**
SUM Business trips	**0.8%**	**3.5%**	**2.9%**	**11.3%**	**1.4%**	**6.5%**
SUM Commercial trips	**–**	**0.3%**	**–**	**3.5%**		
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Christiansen and Baescu (2021) table 30.

The Danish National Travel Survey provides rich data compared with the poor data that are available in many other countries. It is guided by a set of keywords related to the various transport modalities: *How much, how, where, when, and why do citizens move*. In the Danish case, it would be easy to turn these principles of localized and intersectional analysis into action. Although statistics are available in Denmark, more could be added to extend details and disseminate findings in accessible formats. A useful extension of current data collection would be to apply intersectional perspectives more systematically – for example, in the systematic provision of data that shows gender in context and as entangled with other categories such as age, locality, and ethnic background.[6] More public and political attention and systematic follow-up measures would also be useful. All in all the Danish survey could serve as a model for other countries, with the broad provisions of data and the mapping of socio-cultural differences in people's travel, patterns, and needs.

	BAME	Older people	Younger people	People on low incomes	Disabled people	Women
BAME		23%	46%	44%	32%	38%
Older (65+)	8%			24%	44%	14%
Younger (24 & under)	33%			30%	11%	26%
Low income (<£20,000)	33%	54%	32%		61%	31%
Disabled	8%	32%	4%	20%		10%
Women	51%	55%	49%	55%	56%	
More likely than other groups to be…	Younger	Low income and disabled	BAME	BAME, older and disabled	Low income and older	

Figure 6.2 Travel in London. Intersectional data collection.

Source: Chart copied from Travel in London, 2019: 13. https://content.tfl.gov.uk/travel-in-london-understanding-our-diverse-communities-2019.pdf

Transport for London

The third example is a Travel in London survey conducted by Transport for London (Travel for London 2019). The survey – in Figure 6.2 – provides a good and reflective example of how to include gender and diversity in transport data collection and studies. In fact, Transport for London's study is remarkable in the provision of data for intersectional analysis and the application of mixed methods. The data feed into the overall vision of London as a metropolis. The ideal is to provide a sustainable and inclusive transport system by increasing walking and cycling for all groups. This means that social integration and reconnection of communities is a vital objective. In addition to taking socio-cultural dimensions into account, the study also presents a new type of travel analysis based on intersectional data collection. The categories included and collected are defined as BAME (Black Asian and Minority Ethnic), gender, ethnicity, age, low income, disability, and sexuality. The categories are systematically evidenced in the context of various modalities and related to employment, income, harassment, and hate crimes.

In order to cover all aspects well, this report combines quantitative data with qualitative interviews. In so doing, it provides a rich picture, which is forecasted to feed into Transport for London's programmes and projects. The ambition is to be able to reduce the range of barriers to travel that those Londoners who are already disadvantaged especially face. In this way, Transport for London has provided data which can identify and support differences in travel modes. The hope is that this approach will provide and improve creative environments that everyone can use.

Land of the car or kingdom of the bike?

18.48%

51.66%

29.86%

■ Land of the car   ■ Kingdom of the bike   ■ Mixed
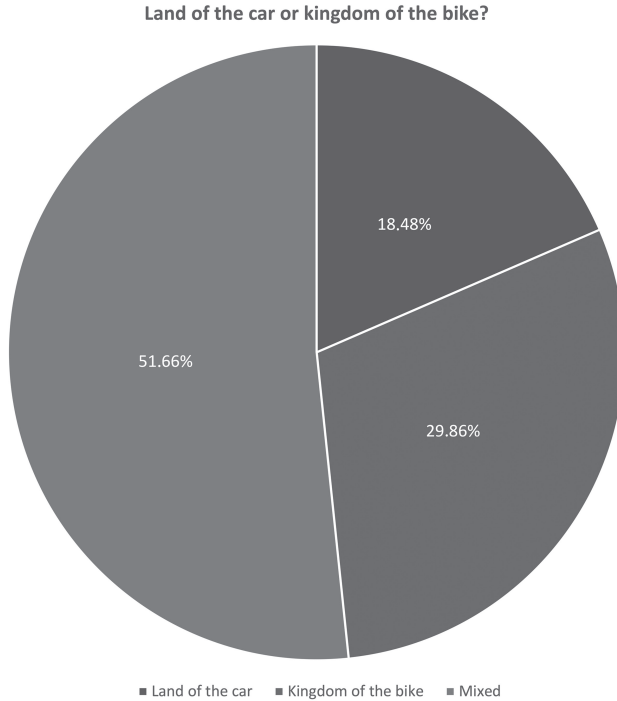
Figure 6.3 The findings of this street survey showed that over 50% of the 246 respondents were critical towards the car-centric developments in Shanghai and wanted a more balanced development with a mix of cars and bikes. There were no clear gender differences.

Source: Hilda Rømer Christensen, data collection. Shanghai 2013.

Street survey – closing data gaps in face-to-face data collection

Sometimes it makes sense to set up one's own surveys if time and resources are available. In particular, where relevant transport data are lacking or scarce, the street survey offers an opportunity to ask questions which one finds relevant, and which the national or city surveys and other available data do not cover. Figure 6.3 illustrates the outcome of a street survey in Shanghai in 2013. (Christensen 2017) The street survey included a questionnaire which respondents were asked to complete. They were instructed by a team of students who, over two to three days, collected nearly 250 responses from various socio-demographic located metro stations in the city. The street survey provided an indication of (dis)satisfaction with the speed of urbanization and the major shift from bikes to motorized transport regardless of gender. China, as mentioned earlier in Chapter 2, has been subject to a radical smart city boom over recent decades, which has changed the nation from the image of kingdom of the bike to the land of the car. A fact that was glossed over in the national statistics in terms of liveability and satisfaction among residents (Rømer Christensen 2015).

Online information on snow cleaning. Danish Road Directorate

Some municipalities now provide online information on the social and modal priorities of snow cleaning. In Denmark, for example, this information is provided by the Danish Road Directorate and the municipality. See https://www.rudersdal.dk/ snerydning and The Danish Road Directorate 2022.

In terms of snow cleaning, the map reveals that high priority is given to big roads with cars. While sidewalks and smaller roads used by children and older walkers come after. A couple of Swedish communities have demonstrated that things could be different and recognized that women, older people, and people with low incomes were dependent on walking and cycling. These groups were disproportionately hit when pavements and bike lanes were omitted from snow cleaning (Avisen.dk 2014). Following such insights, Karlskoga, a Swedish municipality of 27,000 residents, re-prioritized such routines. Earlier, roads to male-dominated workplaces were prioritized. Now, the municipality gives priority to kindergartens, schools, pedestrian crossings, and bike lanes, while car drivers must wait and come last in the snow cleaning programme (Simmel 2014).

Summary

There has been a call for more adequate statistics covering a broader range of demographic and social identities and practices. Both in Europe and many parts of the world, this invites the inclusion of both minorities and non-binary gender categories in big data and national transport surveys. Applying Gender Smart Mobility approaches to data collection would suggest both general and more localized data provisions and the recognition of the need for more detailed data in order to address the potential for change among various groups. For example, in the provision of detailed data of the exact modality split in municipalities and surveys on the willingness to change routines if the right conditions were provided. Such insights could spur new strategies and provisions. What would safe bike lanes and routes to schools and train and bus stations effect? What could proper connections among bus, train, bicycle, etc., mean for various groups? And how could accessibility and safety make daily mobility smoother for people with disabilities, parents with prams, older people and walking impaired, etc.? The inclusion of both various socio-cultural categories as part of the entire transport ecosystem as well as more detailed local data could contribute to a more differentiated and democratic knowledge basis as well as to achieving a more sustainable and fair transport system.

Pictures as data material and how to do visual analysis of smart mobility

The next section focuses on visual data and how smart mobility is communicated through visuals, whether in graphs, photographs, or videos that evidence future visions and scenarios. In general terms, we can talk about a visual turn in social analysis which also includes critical studies of how images are applied in the field of transport and mobility.

Digital and non-digital images offer huge potential as data material for the researcher to investigate. Images provide material that is especially suitable for examining representation, dominating narratives, and imagined realities and to engage with what implications certain representations may have. Images at the same time represent and recreate perceptions and narratives and, therefore, hold a great potential for change. The following examples present simple methods of image data collection and analysis – either collected online or through use of one's own photos.

To use visual analysis and images as a scholar of transport and mobility implies an interest in what the images tell us about society. Images are never innocent and they do not show or mirror the world 'as it is'. Rather, they interpret the world and represent it in specific ways, depending on who sends it, who receives it, and who sees it. Images can both function as disciplining in the ways it shapes our ideas about ourselves and others; yet images can also create a sense of imagined community and imagined identity which is central for both marketing and political change.

Looking at how images and visuals can be collected and analysed in relation to smart mobility, we consider two examples: (a) using YouTube videos from car producers as data material; (b) images as part of qualitative data collection.

Example 1   YouTube videos as data material: visual analysis of gender and diversity in the promotion of smart cars

In the following, we show how a relatively simple visual analysis can be conducted. The method is based on a case analysis from the TInnGO project, an EU-funded project focused on gender and smart mobility (see introduction and references to the TInnGO project in Chapters 1 and 2) offers a demonstration and guidelines on how to apply YouTube videos as data material. The focus is on two well-known European car brands – Volvo and BMW. The case is particularly aimed at scrutinizing how smart cars – electric and self-driving cars – are branded from an intersectional perspective.

YouTube has been an important channel for marketing smart cars for Volvo and BMW.[7] BMW comes as the leading company in terms of smart visuals and viewers. The official BMW YouTube channel BMW was established in 2006. By April 2021, it counted more than 1.2 million subscribers and attracted more than 169 million views. Volvo established its YouTube channel Volvo Cars in 2008 and as of January 2021 the channel had more than 166,000 regular subscribers and has been visited by over 70 million viewers since 2008.

The explorative research design was spelled out in a quantitative mapping of videos from 2018 to 2020 when smart cars and climate issues came of age. A selection of 60 videos was mapped according to gendered representations and profiles. The mappings quantified the proportion of videos with visual gender representation as well as other aspects, including the gendered voice-over which in many videos

Table 6.2 Gender in BMW and Volvo YouTube videos

	BMW		Volvo	
	Women	*Men*	*Women*	*Men*
Total – in all videos	29	29	56	33
%	50%	50%	63%	37%
Proportion of videos where one gender is dominant	30% (9 videos)	37% (11 videos)	50% (15 videos)	23% (7 videos)
Voice-over	0%	100%	90%	10%

Source: YouTube channels approached – on 4 January 2021 (Volvo 2021), 31 May 2021 (BMW 2021).

plays a key emotional and seductive role. The outcome of this quantitative mapping is shown in Table 6.2. It reveals that Volvo depicts more women than BMW in their videos – and more women also hold a proliferated role than in the BMW films. The auditive dominance of women is also noted in the Volvo voice-overs in 90% of the videos; in comparison, male voices dominate in the BMW videos. These quantitative outcomes are by and large echoed in the qualitative analysis which points to masculine dominance in the BMW visuals and the promotion of gender equality in Volvo videos.[8]

The use of mixed methods and the combination of quantitative mapping with deeper qualitative analysis is fruitful. Hence the mapping of 60 videos showed that gender analysis cannot be conducted by body-counting alone; gendered practices in car culture must be contextualized and localized in order to yield their full meaning. While quantitative mapping offers a ground for generalization, the qualitative analysis offered more complexity and depth and illustrated how car narratives become contextualized and inserted into a larger framework of traditional car culture and gendered scripts (Christensen et al. 2022).

The qualitative analysis consisted in the following steps – shown in Figure 6.4:

Step 1: *Introduction of the selected car companies.* This first step is based not only on companies' own websites, but also on the use of newspapers, reports, and magazines. In this part of the analysis, it is vital to ask questions about the history of the car company: What is it known for? What characteristics does it have? Moreover, the price range of the company's cars and where they are sold and produced, as well market shares and size, are all relevant.

Step 2: *Content analysis of the YouTube videos.* We selected a few videos relevant to the brand analysis of smart cars, sustainability, and diversity guided by questions such as: What is displayed in the image – centre, background, margins? Who is displayed – when and where (referring to gender, ethnicity, locality)? What colours and styles are used and how are they 'coded' in gender, ethnic, and class terms? Which elements are the most central – visuals, sound, talk, text? We also focused on which social categories are represented and how they are addressed – are the videos echoing stereotypes or challenging them? Which social characters are associated with the narratives expressed in the videos?
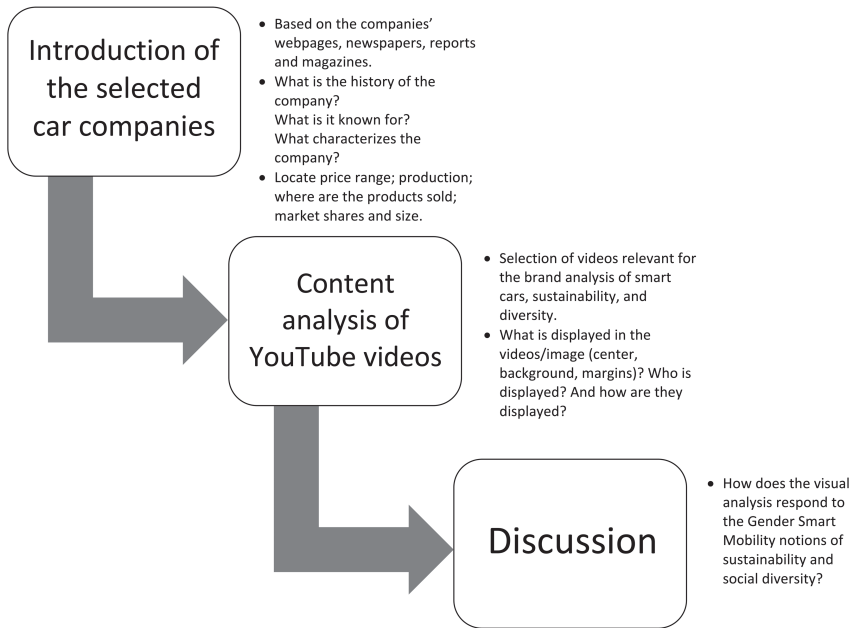
Figure 6.4 Analytical steps in visual analysis.

Source: Hilda Rømer Christensen et al. (2022).

Step 3: *Discussion: How does visual analysis respond to the notions of sustainability and social diversity?* This concluding part looks at how the video narratives respond to the notion of Gender Smart Mobility spelled out in the five indicators developed by the TInnGO project. This step addresses the car companies' self-representation, but it may also widen the complexity of the indicators of Gender Smart Mobility in order to capture, challenge, and change future motorized mobility. We have chosen this approach of visual and qualitative analysis in order to advance new insights and to further reliable research.

Results: The visual analysis of the Volvo and BMW YouTube videos pointed to a lack of inclusiveness (Christensen et al. 2022).There continues to be a re-production of gendered stereotypes within the videos, not least in the notion of 'hyper-masculinity' storytelling in the BMW videos and in leaders looking like middle-class people. Volvo has maintained its focus on female professionals in parallel with the introduction of new and energy-saving cars. Yet, a rather one-sided presentation of a professional businesswoman is depicted, as a replication of the businessman. The two brands meet the Gender Smart Mobility indicators only to some degree. Neither of the companies are fully inclusive, and it is difficult to label them as gender smart and sustainable despite their ambitions of feeding into the green transition.

**Example 2   Images can make data collection more creative –
photo elicitation**

Images can also be used as part of qualitative data collection. Photo elicitation
is a method where pictures are used to collect and assess values, practices,
and preferences. It is a method that can be a useful to encourage opinions of
norms and practices among respondents; images evoke feelings and often
provide immediate responses regarding likes and dislikes. The assessments
often happen in a more spontaneous manner compared to the method of data
collection based solely on written questions and oral communication and
exchanges (Ketelle 2010).

We used this method in order to study various contrasting feelings of the roller
or walker as an assistive technology. Many people feel ashamed and abstain from
using the roller in order to avoid age discrimination. We asked a group of roller
users to comment on a small collection of visuals showing roller users in various
contexts, both as individual users and as users located with others in various social
contexts. The users were located in everyday situations – streets, public transport,
walking in the park, attending social events in roller clubs, etc. Moreover, the im-
ages implicitly accentuated gender and class, and various forms of lifestyles and
of socializing as an older person. The sample of pictures derived from targeted
Google searches – web-based images as well as private photos, where faces were
blanked out and so made non-recognizable.

Practical guidelines

Images and the method of photo elicitation can be used as a simple way of open-
ing up new fields of knowledge about perceptions of transport and mobility. Since
images are not neutral and depict the topic from somewhere, the researcher needs
to be aware of the aim and composition of the sample of pictures/images they use.
Therefore, before selecting the images the researcher should consider the following
questions:

What is the aim of using pictures?
What kind of reactions will be useful for the study?
Should the pictures call on recognition or provocation?

Moreover, the following matters related to the selection of images should be
considered:

the social profile of the persons, clothes, and particular activity;
the dimensions of gender, age, and ethnicity;
the design of the roller/assistive technology;

the health profile of the person – how age, bodies, and rollers are presented;
the location context: city/countryside/nature, street scene, weather, time of day.

In the case of the roller, the use of images aimed to stimulate memory, and to invite the respondents to recall experiences in everyday life of people using a roller. We aimed to widen the perspective and to provide evidence of how stereotypes of age and roller users are handled, and to raise awareness among citizens, social workers, and city planners that could contribute to an elderly friendly city.

Findings – Smart is not always digital

Respondents were asked to choose the images they liked the most, and also to say why they liked these particular images. They were asked to explain their choice and to relate it to their own visions of becoming old and walking impaired. The situations and choices were made according to the current situation of respondents as roller users – or as an elicitor for a future imagined situation as an older person using a roller.

Hence comments on the sample of images covered a broad field of opinions, ranging from pure resistance to commenting on and choosing their favourite images. One comment at the negative end of the spectrum was: 'I do not like any of the pictures, because I would like to get rid of the roller'. An image of an upright male figure and the image in Figure 6.5 of the woman with the white jeans were among the most popular, chosen by several of the respondents with comments like 'This is how I would like to see myself in old age'. Another image of two women walking with rollers in a park was chosen by those who appreciated private socializing – and who were reluctant towards the idea of creating a social club based around those with rollers (see Figure 6.6). Some of the photos also prompted negative feelings: a couple in a lower middle-class area walking with curved backs and the visuals of people who looked as if they were unwell were turned down as role models by respondents.

Overall, the use of images in this case study qualified a view 'from below' and everyday use of the roller and walking mobility in current society. The case study demonstrated that mobility is significant for quality of life and for living a good and independent existence as an older person. It also paved the way to address broader issues such as barriers and the lack of accessibility in many public facilities, and in public transit in particular. Some of the older respondents also called for smarting and diversifying rollers and for user-driven innovation in the form of shared digital city rollers, roller lanes, even surfaces and seamless access to stations and public transport.

Summary

In general, data must relate to the aim and interests of research. Is the interest, for example, to map out intersecting inequalities of transport modalities at the national or the city level and the effects on gender, age, and class? Or is the analysis intended to locate finer grained everyday cultural and social differences and

Figures 6.5 and 6.6 Two of several images that respondents were asked to comment on.

Source: Hilda Rømer Christensen (photo).

practices? Both questions and interests are relevant, but in order to provide adequate answers, different research methods will be appropriate. For the issue of mapping effects of transport modes and modalities, macro-analysis and the use of big data sets will obviously be the most feasible approach. While the more detailed analysis of daily practices and preferences of various groups and sub-groups might be better elucidated through micro-analysis using qualitative and mixed methods in visual analysis, interviews, observations, or other forms of qualitative methods.

Notes

1 See, for example, Walk21 Ireland – International Walk21 Conference on walking and liveable communities. https://walk21.com/work/conference/ireland-2022/.
2 Who we are – Eurostat (europa.eu) assessed 15.1.22. A report from 2013 showed that general transport data at the European level are uneven and absent in many countries. The lack of consistency applies to frequency of data collection, type of data collected, survey methodology, implementation, and how the data are subsequently used. The conclusion was that comparing travel patterns or coming to meaningful conclusions about European travel patterns or the impacts of co-modality ICT solutions on travel patterns across countries was/is extremely difficult.
3 In 2020, a special issue of the Eurobarometer on mobility and transport was published covering all EU Member States (Eurobarometer 2020a), followed by another special issue on connected and automated driving (Eurobarometer 2020b). Useful information can be found at She Moves – Women's Issues in Transportation, The European Commission Directorate-General for Mobility and Transport (DG MOVE), with contributions from Maria-Cristina Marolda and Ariane Dupont.
4 Transportvaneundersoegelsen (**The Danish national Travel Survey)**. See history and presentation in Danish language: https://www.cta.man.dtu.dk/Transportvaneunders oegelsen/Om-TU
5 Phone consultation with Hjalmar Christiansen, Director of the National Danish Travel Survey, Danish Technical University. 22 March 2021.
6 Farkas 2017. The report shows that data collection in the field of ethnicity is far from harmonized. A certain reluctance persists due to the conviction that no discrimination exists – or that specified data collection will harm the minority group. In Central and Northern Europe, the lack also derives from historical legacies going back to fascism and the holocaust where registration of minority groups turned out to be disastrous.
7 Statistics were collected from the YouTube channels of the two companies – on 4 January 2021 (Volvo 2021), 31 May 2021 (BMW 2021).
8 The TInnGo project experimented with more advanced digital methods in the mapping and location of gender and diversity in smart mobility. Yet it turned out that digital tools such, as image scraping, is particular problematic due to frequent misreadings of gender and race (TInnGO 2022).

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7 Gender Smart Transport Policy, Employment, and Innovation

Gendered bodies and norms in transport policy

Barbara Castle ([Figure 7.1](#)) was a British Labour Party politician who served as the first British female transport minister from 1965 to 1968. Among her policy achievements as minister was a rise in urban public transport investment, so that it was more on a par with roads, and providing more funding for bus services. She also initiated the concept of the 'social railway' – the principle that government can subsidize unprofitable railways where they bring wider social and economic benefits. While Castle was criticized for not being a car driver herself, she took a pragmatic approach and recognized that an increase in private car use was inevitable. But she was determined to make the roads safer. Despite death threats and serious controversies with leading civil servants and the public, remarkable interventions such as speed limits, breathalyzer, and seat belts are enduring legacies from her time in office. Later on she was instrumental in the introduction of the Equal Pay Act in Britain and played a supporting role in the well-known Dagenham strike for equal pay. She was said to be both pragmatic and radical during her time as transport minister. Barbara Castle was reluctant to take up the job of transport minister but later said it was the post she enjoyed the most.[1]

The story of Barbara Castle and her transport interventions is remarkable because the Western world had seen very few women transport ministers until the twenty-first century. In spite of differing national and transport contexts, it seems that some of the more notable female transport ministers have been appointed at times when governments are looking for a game change in transport towards sustainable and balanced transport policies. In 1965, Harold Wilson, then UK prime minister, said that he wanted a 'tiger in the tank' of transport policy and that's what he got with Barbara Castle who was known as an engaged and influential politician.

Transport policy in numbers

Transport and mobility is a longstanding field in the Western world and now also at global levels. A feature that runs as a distinctive undercurrent in transport policy is that it is a male policy area, and it has remained so even in recent decades. Even though gender equality has been addressed in the EU and in EU Member States

Figure 7.1 Unveiling of a bronze statue of Barbara Castle, the first British female transport minister (1965–1968), Jubilee Square, Blackburn, 9 October 2021.

Source: Picture by Peter Byrne/PA Archive/PA Images.

since the mid-1980s, the gendered imbalances are still striking both at ministerial levels and in current European transport councils and committees. In recent mappings conducted by the TInnGO project, the gender gaps were striking at all levels.

As the first female minister for transport, Barbara Castle has only now, 50 years later, been followed by a few other women in the post in the EU and the European context. The gender gaps in transport are still striking. The TInnGO mapping of transport ministers across EU countries – UK, Portugal, Romania, Germany, Spain, Sweden, France, and Denmark – shows that since 1945 only 23 out of a total of 245 ministers have been women. The table shows extremely low numbers of women ministers in most of these member states and three member states, Germany, Greece, and Portugal, have never had a woman transport minister. At the other end of the spectrum, UK and Sweden have had five and six ministers, respectively, as seen in Figure 7.2 which is still modest (Christensen and Breengaard 2019). A similar mapping of national parliamentary committees across the same EU countries in 2019 (UK, Portugal, Romania, Germany, Spain, Sweden, France, and Denmark) showed some variations in the proportion of women between 7% and 40% as seen in Figure 7.3.

There seems to be a link between the ministerial level and the gender balance in national transport committees; substantial change in representation has come about as an outcome of national gender equality policies – for example, in Sweden, via

gender mainstreaming of transport, and in France and Spain as an outcome of the gender quota system, introduced over recent decades.

The overall aim of EU gender policy, to close the gender gap in relevant policy committees and representation, is far from met. And things are not progressing; a comparison of the figures from 2007 and 2019 is shown in Figure 7.4.

Transport policy as a masculine field

In the following, we look into the dimensions which mark the field of transport policy and decision-making bodies as a masculine area. In particular, we delve into relevant logics in the field and the concept of appropriateness in analysing cases where female transport ministers have entered the field. Transport policy epitomizes stories and explanations of how hegemonic power is enacted and re-produced. The notion of feminist institutionalism here provides an analytical lens to argue that power and priorities are reproduced through a certain logic of what is called 'appropriateness' (Kronsell 2015; Magnusdottir & Kronsell 2021). It is a logic that makes the inclusion and analytical reflection of genderless welcome and accepted in policymaking and institutions, while at the same time it makes certain masculine norms and stereotypical gender norms the most accepted and hegemonic.

Sonja Mikkelsen, who became the first transport minister in Denmark in 1998, is another illustrative case of such logics of appropriateness. It shows how mascu-linity and stereotypical gender norms still pervaded politics around the turn of the

Gender distribution in EU Committees

■ Male ■ Female
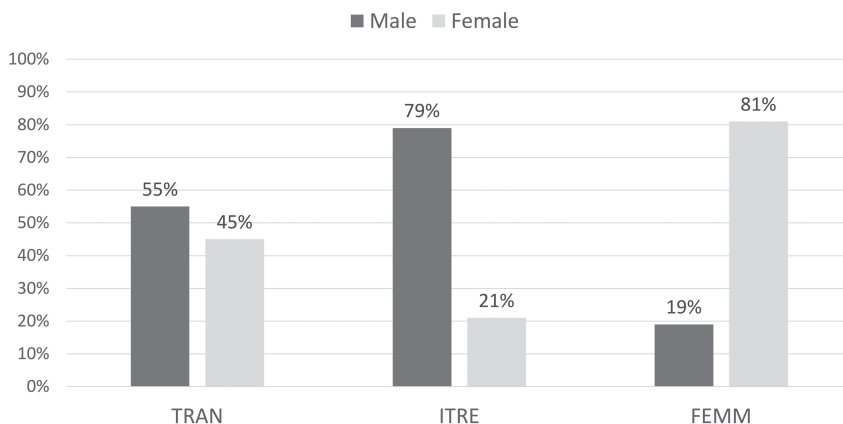
Figure 7.3 The parliamentary committee on transport and tourism (TRAN) is responsible for the development of common policy within transportation and thereby influences not only varied transport modalities such as air transport, maritime, inland waterway, rail, and road, but also other important concerns regarding transport such as safety, services, tourism, postal services, and a range of related agencies. The committee Industry, Research and Energy (ITRE) is responsible for the European Union's industrial policy, new technologies, research and innovation policy, and small- and medium-sized enterprises. The Women's Rights and Gender Equality committee (FEMM) treats gender mainstreaming and is responsible for implementation and further development of gender mainstreaming in policy sectors, hereunder equal opportunity policy in the labour market, and treatment at work.

Source: The European Parliament, Committees (http://www.europarl.europa.eu/committees).

twenty-first century. Right from the start of Sonja Mikkelsen's appointment, the print media foresaw a cultural and political change in the ministry, which a few years before was routinely seen as the 'car' ministry. Before her appointment, in the 1980s, she had voted against some of the big and contested infrastructure projects and was at that time regarded as a 'highway hater' (Rehling 1998). The powerful head of the transport ministry reflected the general atmosphere when he welcomed Sonja Mikkelsen as the new minister in gendered and rather patronizing terms: 'You are the first lady [sic!)] as minister in the long history of the ministry. We are looking forward to see if you prioritize other values. We know that you have courage and dare to express your opinions unreservedly. This can make us all sweat. Please remember that you are member of a government' (Rehling 1998).

Sonja Mikkelsen challenged both the car-centric transport policy and, at the everyday level, changed the meeting culture of the powerful transport committee, serving carrot and sticks instead of the piled-high open sandwiches. As for gender, she addressed the skewed gender balance on the many committees and boards and recognized how prevailing norms influenced political priorities: 'There is a clear connection between male politicians, middle aged male car

Percentage of Men in EU Parliamentary Committees

■ 2007   ■ 2019
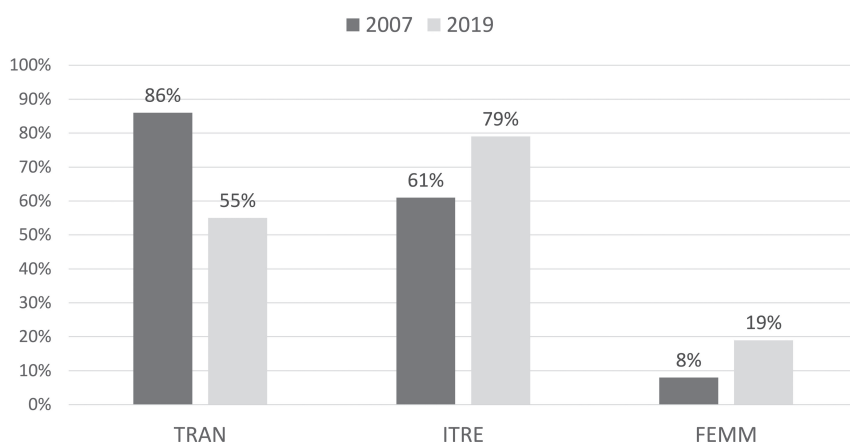
Figure 7.4 Percentage of men in EU Parliamentary Committees, 2007 and 2019.

Source: The European Parliament Committees, http://www.europarl.europa.eu/committees; Christensen et al. 2007: 83–85.

drivers and investments in highways – and therefore also falling investments in public transit' (Mikkelsen 2004). The changes introduced by Sonja Mikkelsen were not welcomed by the tone-setting politicians and lobbyists who saw it as a relief when she left office. But she was appreciated by the less influential communities and environmentally friendly politicians and NGOs as the only one in a long row of transport ministers who did a lot to handle transport as a whole. 'She fought courageously for more than roads and cars' was one of the assessments. Her climate-friendly politics were acknowledged: 'She is one of the best – she is the one who has prioritized public transit the most and also supported the repair of trains and tracks' (Tornbjerg 2000).

The position of transport minister has not been attractive in many countries, due to the scope and complexity of the field and, perhaps more importantly, the risk of scandals and compromising one's political career.[2] This is also seen in the fact that many transport ministers have only been in office for short periods. This is the case in several European countries, and Denmark again provides a good example with no less than 46 transport ministers since 1945. The constant flow of new transport ministers should not, however, be mistaken to mean that the post and the field is without power. In reality, transport policy at national, European, and global levels is developed by a less visible but powerful group of civil servants, who in alliance with politicians and other agents represent various interest groups and private enterprises. Most are men who are, explicitly or implicitly, in line with the dominant transport and car regime. Case studies show that this has allowed the development of a particular technology-focused culture and masculine style, which has not assisted the inclusion of diverse groups or new climate and environmentally friendly transport policies (Christensen and Breengaard 2021).

While these few women ministers have operated in a genuine man's world, stories show that there are nuanced and individual ways of doing policy. In general, one can say that acts of policymaking are performed by gendered individuals, who act in accordance with certain cultural, political, and social rules and institutional cultures. Therefore, their accomplishments, or lack thereof, are not a completely individual matter but need to be seen in a broader context of history, geography, and of gender norms and practices.[3] Following a feminist approach, acts can be understood as 'shared experience and collective actions' (Butler 1988: 525, as cited in Lissandrello 2015). More specifically, this connects to the idea of gender performativity, which at its initial stage was developed by the American philosopher Judith Butler.

Box 7.1   Transport policy as a performative act

According to Judith Butler, gender can be seen as a particular type of process – a 'set of repeated acts within a highly rigid regulatory frame'. On the one hand, this means that the subject is not free to choose which gender it is going to enact since the subject is already determined within a cultural framework of heteronormativity. On the other hand, there is a possibility of agency and choice which can be compared with a wardrobe: it consists of a limited selection of outfits which depend on gender as well as other socio-cultural categories such as class, ethnicity, and geography (Salih 2002: 63).

Gender representation and the challenge of sustainability

The focus on equal representation is a response to a deeper democratic deficit and the issue of gender and social imbalances in policymaking, which poses particular problems and gaps in transport policy. Since people tend to address their own needs while not necessarily recognizing or knowing about the needs of others, such inequalities also tend to effect the outcomes of plans, strategies, and legislation. And so the lack of mixed representation in various transport councils and ministries might easily end with policies that omit both diversity and sustainability in travel patterns (Christensen & Breengaard 2019). The issue of gender balance and women's participation links to discussions about inclusive and sustainable transport strategies and also raises critical questions about representation and substance in politics. As we have already shown, transport has clearly featured as a policy area conducted by men from the very beginning (Magnusdottir & Kronsell 2021).

In sum, explanations for the enduring gender gap in transport policy point to the following barriers:

One explanation for the lack of gender balance is that transport, including the numerous committees and powerful special units, aligns more with masculine performance and it is therefore difficult for women to gain access to it.[4]

A related explanation centers on gender specific interests where transport traditionally counts as a 'male field'.

A third reason might be that transport is a difficult and less attractive policy field, which is often hit by problems and scandals as in the case of both Castle and Mikkelsen.

Box 7.2   Gender representation and the question of fairness

Gender representation and the question of fairness in elected assemblies is a longstanding issue in feminist theory as well as in political practices. For example, in her path-breaking study *The Politics of Presence*, Anne Phillips challenged the dominant idea of representation as only concerning ideas and not the people representing those ideas (Phillips 1998). At the same time, Phillips noted that making 'democracies more democratic can never be just about representation; it also depends crucially on the forms of organization and participation in the wider society' (Phillips 2000: 19).

The question is whether and how such enduring imbalances in terms of gender as well as other categories such as age and ethnicity have an effect on policy? How does diversity in elected political bodies, municipal councils, national parliaments, and committees effect policy outcomes – particularly as these concern the enhancement of sustainable and climate-friendly transport policymaking?

Available data are scarce and fragmented and point in several directions, according to the specific context and local political culture (Kronsell et al. 2015). A Danish analysis from 2019 shows how gender affects political priorities and representations in Danish municipalities. It turns out that women across party lines generally support the allocation of more resources to childcare, healthcare, and people with disabilities (Hermansen 2019). The study also shows that female politicians in municipal councils favour collective transport more than their male colleagues, while policy areas such as 'roads' and 'environment' have a lower level of interest among women. While the study does not provide any explanations of this phenomenon, we might assume that it relates to women's general higher dependency on public transit as well as their transport responsibilities for children and older relatives. Furthermore, this study shows that women only have an impact on their favoured policy issues in municipalities where they both make up a critical mass – of 30%–40% – and where they are in powerful positions, for example, as mayors (Hermansen 2019).

A recent Swedish study has both challenged and developed methodological approaches to the study of gendered effects on transport and sustainability policy.[5] The study found

- no clear evidence of links between women's participation on committees and the effects on CO_2 friendly and sustainable transport policy;

- that it was not gender but a covariance of urbanities/population density that was the most significant dimension for sustainable transport practices;
- that women's representation and the potential for game change was overridden by the institutional culture and path dependency;
- masculine culture and traditional (gender) norms played a key role (Winslott-Hiselius et al. 2019).

There is today a growing recognition that gender balance alone does not automatically initiate change and that deeper analysis of political culture is needed in order to locate the most optimal conditions for change. This was demonstrated in another Swedish study based on textual analysis of policy documents such as transport strategies and committee records. Through textual analysis, the study demonstrated empirically how Swedish municipalities developed their (sustainable) transport policies from 2014 to 2018 (Hermansen 2019). These findings indicate that the level of sustainability, in plans and strategies, is related to the presence of diverse masculine and feminine norms rather than to a simple gender composition and binary male and female bodies. Based on comprehensive empirical data, the study outlined practices that have been shaped by history and which are enacted in contemporary society. They constitute masculine and feminine norms which are then related to sustainability in transport in various locations. These analytical constructs can in general be located in many mixed and messy forms and in new constellations (Hultman & Anshelm 2017).

Box 7.3   Interacting discourses on gender policy practices

Four interacting discourses found in a comprehensive study of Swedish municipalities, sustainability and transport policy with effects on gendered policy practices can be roughly outlined as follows:

Technical masculinities. A discourse that values technical knowledge and technical rationality relating to transport infrastructure, the development of vehicles (currently electric and autonomous vehicles), and operations designed to minimize losses and maximize value and contribute to economic growth. Deriving from the making of modern industrial society and car culture in the twentieth century, this discourse is mainly process controlled, where experts consider mainly top-down sources of knowledge. It is grounded in economic and technical rationality, goal oriented, and aims to achieve ends in the most rational way. Technical masculinity norms derive from engineering and economics which favour large-scale, centralized energy solutions and technologies. These norms are embedded in a patriarchal social structure that views nature as a free resource to be exploited (Kronsell et al. 2020: 131; Walton 2020).

Sustainable masculinities. Evolved in the 1960s with the green social movements – in opposition to centralized industrial masculinity. Sustainable masculinities are critical of technological fixes and the overestimation of technical and economical rationality. Sustainable masculinities favour small-scale technologies, decentralization of power structures, and aspire to cohabitation with nature in everyday life. It claims that there is a need for extensive social structural changes that go beyond voluntary, consumer choice, and market solutions. Sustainable masculinities may include democratic participation, equality politics, and politicians with long-term responsibility for the biosphere. Although sustainable masculinity has evolved with an emphasis on challenging technological fixes, it does not necessarily include the emphasis on gender equality or the inclusion of diverse agents (Kębłowski & Bassens 2018).

Equality femininities. A historical notion which evolved during the nineteenth century. Put simply, the idea is to integrate women as equals into ongoing economic and development processes. Equality femininity is focused on giving women the same possibilities for development in the economic and political spheres, access to the same resources as men, and equal rights. Equality femininities do not address sustainability as a specific gender issue – which means that equality femininities might embrace the same priorities of economic and technical rationality as found in technical masculinities, including the use of quantitative knowledge and top-down policymaking. The focus is on equal opportunities, rights, and equal access in transport policy and modes (Kronsell et al. 2020: 131).

Sustainable femininities. The roots of this discourse are ecofeminism in practice and in politics. Ecofeminist theory presents a mix of feminist politics on the oppression of women and its connection to environmental destruction with a concern for the earth and a critique of modernity, science, and technology.[6] It brings to the fore the idea of particular feminine cultural and spiritual values. Vandana Shiva, a notable proponent, argues that violence against women is inherent in the capitalist model and that the destructive nature of development has its roots in modern science, which has excluded female experts and, in parallel, excluded holistic and ecological ways of knowing. As in sustainable masculinity, there is also a desire for the decentralization of power structures as well as policymaking as mentioned in detail below.

Today, there are several branches of ecofeminism, with varying approaches and analyses, including liberal ecofeminism, spiritual/cultural ecofeminism, and social/socialist ecofeminism (or materialist ecofeminism). What unites many of the current discourses is the ambition to include user-driven solutions – and co-creation and inclusion of civil society in terms of planning. Sustainable femininities emphasize emphatic rationality – which includes putting a high value on social relations

and care ethics as a guide to interactions between humans and between human and nature. According to care ethics, humans are constituted through social relations or interdependencies – which in ecofeminism is extended to include care for fellow human beings and interpersonal relations.

The notion of Gender Smart Mobility echoes in various ways the emphasis on current ecofemininity or feminisms. Here, the transport system is viewed as including social, environmental, economic, and governance systems. Moreover, the time horizon in ecofeminism goes beyond the present and includes the long-term and future generations for intergenerational equity. The connection between land use and transport should also be reflected (Cornet & Gudmundsson 2015).

From our point of view, it is vital to look at how agency is possible and to re-think power as productive and as acting in many fields. Gender Smart Mobility invites an approach in the field of transport policy and practices with new methods which not only focus on text and talk but also take into account material and bodily experiences and affects as co-constructing the field (Lissandrello 2015; Adler-Nissen 2016; Lissandrello et al. 2016). In order to substantiate such perspectives, we have provided examples of visual analysis (see Chapter 6).

In this volume, we have worked with Gender Smart Mobility as an updated analytical and methodological approach that seeks to avoid simplistic and binary positions. While recognizing the need for analytical distinctions between discourses that are active in policy cultures, the notion of Gender Smart Mobility indicates that something new is emerging. It is a composite concept, which aims to avoid the divisions, contrasts, and historical legacy of former liberal and ecofeminist positions and discourses. Gender Smart Mobility indicates that new formations are underway, and that policy strategies are often blurred and messy. The notion of Gender Smart Mobility, presented in Chapter 1 and applied throughout this book, carves out new avenues that are open towards gender smart innovation and the intra-actions of humans and smart technologies. In addition, it includes a bold emphasis on diversity and inclusion of all groups.

Women's employment in the transport sector

The transport sector is considered to be a male-dominated sector. One reason for this is modern transport technology, which created gendered stereotypes and the assumption of technology as a male expertise. Another reason for keeping women out of the sector right up until the 1960s was fear of women as competitors and wage pressures held by male-dominated trade unions and interest organizations. Following World War II, when women entered the transport sector as emergency workers, and the post-war economic boom, the transport sector slowly started to open up employment possibilities for women. Developments were uneven and slow, and varied with national contexts and labour laws, gender stereotypes, and traditions.

In 2018, females represented less than 20% of the global transport workforce (International Labour Organization 2019). Within the European Union (EU), in the same year, the average female participation rate in the transport-related workforce

Figure 7.5 "Trisse" Magna Hakansson, first women tram conductor in Copenhagen.

Source: Archive of HT-Museet, Skjoldeæsholm.DK.

was 22%, while the EU average female participation rate for the total workforce was 46% (European Commission 2019). Despite this gap, the EU has one of the highest rates of female employees in the transport sector compared to other parts of the world. However, while women do participate in the sector, relatively few rise to managerial positions.

In some countries, women have been barred from driving. As late as 2018, women in Saudi Arabia were able to get behind the wheel after the historic lifting of the ban on women driving. Moreover, a report from 2018 found that 19 countries around the world legally restrict women from working in the transport sector in the same jobs as men. This applies to countries such as Belize, Dominica, and Nigeria, as well as in the Russian Federation, Belarus, Kazakhstan, and Uzbekistan (The World Bank n.d.).

So even today, in the twenty-first century, gender gaps in transport employment are remarkable all over the globe. Figure 7.5 shows average female participation in the transport sector by region in 2018 as shown in Table 7.1. The range is from 23.2% in North America to nearly 19% in Europe (including Turkey), and just over 10% in Latin America, with Africa and Asia having around 8%–9% of women in the transport workforce (International Labour Organization 2019).

Table 7.1 The transport sector in numbers

	Number of countries	Average female participation in the transport workforce (percent)
EEA and Turkey	33	18.9
Africa	1	8.1
Asia	2	8.4
Latin America	6	10.8
North America	2	23.2
Transition	2	16.3
Total	46	17.3

Data Source: International Labour Organisation (2019)

Yet, while the average gender gap is an important starting point, it is relevant to also look at the distribution of managerial and lower level service jobs. In air transport, for instance, where 40% of employees were estimated to be women a decade ago, most work as flight attendants or in customer service-related roles (Turnbull 2013). In 2019, the International Air Transport Association (IATA) estimated that only 5% of the global pilot population is currently female; only 3% of airline CEOs are female. The fact that women are under-represented as pilots, as well as in maintenance, repair, and overhaul roles, is often explained as a result of stereotypical views that women do not have the abilities required to fly or repair an aircraft; the lack of encouragement for women to choose careers in aviation is also a barrier (Seligson 2019). Similarly, in maritime areas, women represent only 2% of the world's 1.2 million seafarers (International Maritime Organization 2021), while some estimates suggest that 28%–30% of cruise ship workers are women seafarers (Ng & Acker 2020).

In land transport, figures also vary, though they show a persistent gender gap. In the EU's urban public transport sector, women account for approximately 18%, on average, of total employees ranging between 5% and 31% but represent less than 10% of drivers. Another example is the employment rate in the railway industry in the UK which in 2015 counted 16% female and 84% male employers, a share much lower than the 47% of women in the national workforce (Women in Rail 2015). Looking at Denmark, routinely regarded as a land of advanced gender equality, reveals considerable gender segregation in the transport sector with only 12% women in the land transport sector, 27% in water, and 32% in air transport in 2017.

Closing the gender gap

In the following, we present stories that show how three pioneers met, handled, and overcame the general atmosphere of stereotypical sexism and racism in the transport sector. These women entered the public transit sector and became celebrated and appreciated both by the companies and by passengers. Besides, they demonstrated that it is possible to balance work and care obligations when working in the public transit sector. Some also appreciated that they had entered a sector offering what they regarded as a better paid job and the potential of equal pay.

Box 7.4   Three histories from first movers in public transit

Elizabeth Duff

Elizabeth Duff broke both gender and race barriers as the first black woman employed as a bus driver in Nashville, Tennessee. She was hired in 1974, the week after she learned that the bus company was looking for women to fill their driver vacancies.

Soon after she was hired, three other women joined Nashville MTA and the transit authority soon realized they had to make some basic adjustments, like building bathrooms to accommodate their new employees. Breaking gender and colour barriers also meant that Elizabeth Duff endured sexism and racism, including people questioning a woman's ability to drive. In 2004, she was named Urban Driver of the Year by the Tennessee Public Transportation Association. Duff received the accolade because of her attendance, cooperation, courtesy, and safety record. When asked by the newspaper *The Tennessean*, why she was drawn to driving, she said, 'When you really drive, you feel the vehicle itself. You listen to the motor. You feel the road' (Transdev 2021).

Magna Hakansson

Magna Hakansson was a first mover in the Copenhagen Tramway where she became a conductor in 1960. She was a lonely parent with four children and she became the first female conductor at the Copenhagen tramway. Later on, when the trams were discontinued, she became one of the first and few women bus drivers. She recalled the tramway's equal pay policy, 'we received total equal pay with the civil servants, which was quite unusual at the time'. The Copenhagen tramway took the first steps in allowing women as tram conductors in 1955, but only on the condition that they were paid by the hour and that they did not function as a pressure on wages. And so the first team of female tram conductors was trained and started their jobs on the Copenhagen tramlines in 1960. This meant a leverage for the first women employees (Lorenzen 2018).

Jill Viner

Jill Viner (1952–1996) became the first woman to drive a London bus licensed to carry passengers as late as in 1974, see Figure 7.6. She was based at Norbiton garage in south-west London. Jill retired from driving buses in 1993.

Jill knew she wanted to become a bus driver as early as 1960 and recalled her interest in bus driving: 'I've always been interested in buses – don't ask me why. I was about eight years old when I made up my mind I wanted to be a bus driver'. Yet back then women, due to the British law, were forbidden from driving passenger buses and it would be another 14 years before the law changed and the role was opened up to women. Jill was the first to drive passengers in service.

Figure 7.6 Jill Viner, the first women bus driver in London, 1974.

Source: London Transport Museum: https://www.ltmuseum.co.uk/collections/collections-online/photographs/item/1998-19170

A recent survey which included comments from colleagues in the transport sector illustrates how gendered stereotypes are still invoked in people's thinking of women as drivers. They range from unconscious biases to the clear existence of stereotypical thinking and downright resistance to women's driving abilities.

> They need to be taught how not to be scared.
>
> They need more training to make them better drivers and confident drivers.
>
> Women are weaker than men, but they have to take a risk working in these positions. They have to separate and miss their families.
>
> Women drivers do not have the sharp decision, so they cannot drive effectively.
>
> Whenever I have to work with a woman driver, I always feel that I have to work more carefully and will end up finishing work later than usual.
>
>   (ITF Women Bus Drivers and Conductors Research 2010–2012: 8)

There is a democratic, economic, and also a clear business case for hiring women in the transport sector. As argued by the World Bank and regional stakeholders, closing the gender gap could help transport companies meet their staffing needs by ensuring that they are not missing out on half of the population in their recruitment practices. It could also improve their customer services by putting both women and men in public-facing roles, such as driving, as well as enhance their public image: companies with a more equal balance of women and

men can project a more progressive image that is representative of their customer base (Ng & Acker 2020).

Studies show that important areas that need to be addressed to close the gender gap in transport include working hours and shift work, sexual harassment and violence at work, health and safety at work, leave and pay, training and retraining, and ergonomics, including the layout, design, and mechanics of cabs. Addressing issues relating to working conditions will help to encourage women to enter the bus and truck industry. Some International Transport Workers' Federation (ITF) unions have taken up these issues by bargaining for improvements in collective agreements at workplace and industry levels. Other unions have undertaken public campaigns to address the issues (ITF 2013: 1).

There is a range of issues that need to be addressed in order to attract more women and close the gender employment gap in the transport sector. As discussed, there are challenges that have a specific impact on women workers and which might hinder their ability to work, not only as drivers, but also in the transport industry in general. At the same time, many of the challenges are common to both men and women, and all employees might therefore gain from new gender sensitive initiatives (ITF women bus drivers and conductors research, London 2013).[7]

Experiences of the women first movers described above are similar to those in recent studies of what motivates women to enter the transport sector in the twenty-first century. Such findings can be seen as lessons for transport providers, unions, and politicians, if they want to integrate more women into the workforce. A study from 2012 (ITF Women Bus Drivers and Conductors Research 2010–2012) listed the following main reasons why women become bus drivers:

a   family connection (where a family member – including a partner, parent, or sibling – was already working in the same position or was working at the company);
b   recommendation from friends;
c   being attracted to this type of work (e.g., liking to drive, working with people)
d   believing that the job will have good benefits and security
e   already having experience as a driver in a different sector (e.g. trucking, school bus)
f   a transfer within the company from, for example, bus conductor to driver (and vice versa)
g   returning to the occupation after a period away
h   applying for the position in response to an advert.

Box 7.5   'More women in the driver's seat'

A recent campaign was launched in Denmark called 'More women in the driver's seat' that aimed to address women and diversity in cargo transport. Here women made up only 2% of employees in 2020. The campaign was launched by a taskforce, which included transport unions, transport providers,

and employment organizations as well as gender and diversity experts. The taskforce provided a catalogue which introduced problems and potential solutions and described various tools and methods to address the issues. Practical advice covered all levels of employment as well as unions and organizations. Not least, a change and more attention towards gender and diversity in transport culture were recommended. However, the aim was set as low as 10% of women employed by 2030. The taskforce explained that they wanted to set a realistic goal! (Taskforcen for Flere Kvinder i Førersædet 2020).

Female entrepreneurs – pioneering gender smart innovations and mobilities

Female entrepreneurs and gendered innovations may provide a game changer for smart transport, both in terms of entrepreneurship as a profession/livelihood and income possibility for women as well as in terms of creating new and path-breaking technologies for everyday use.

While entrepreneurship and innovation is celebrated in major political and economic strategies around the world, it is also a highly gender-segregated sector. Women, for historical and reasons of tradition, still make up a minority of entrepreneurs and innovators. Barriers are due to the fact that entrepreneurship and innovation is still very much connected to technology as a male field as well as the low interest of investors to provide capital for women entrepreneurs. Studies show that poor provision of capital has created enduring barriers for women inventors and entrepreneurs both in the West and in the East (Poutanen & Kovalainen 2017). Entrepreneurship may also be seen by women as a risky business that is difficult to combine with care responsibilities.

The idea of gendered innovation forms a corrective to the bulk of current research and innovation practices, which connect to the notion of gender smart innovation. Gendered innovation rests on the conviction that traditional forms of gender bias or gender blindness in research and innovation is socially harmful and expensive and leads to missed market opportunities (Schiebinger & Klinge 2013: 1). Gendered innovation focuses on gender as an analytical category in innovation processes. This means that gendered implications should be reflected from the beginning to the end of innovation processes. Gender, understood in an intersectional context, should be reflected from the conception of ideas, through design processes and methods, and applied to the inclusion of gendered end users.

In the following, we present examples of gender smart innovation provided by women. These examples address non-motorized transport – shared bikes and various gender smart gadgets that also support women as parents and as cyclists. They demonstrate that gendered innovation is a gain for all urban cyclists, regardless of gender (Christensen 2020). The examples show how female entrepreneurs might contribute to more inclusive transport. They are based on an analysis of the visualization of the entrepreneur's products and users, conducted as part of the TInnGO project in 2021.

Gender smart innovation: Smart is not always digital

The roller or walker was invented by a Swedish nurse, Aina Wifalk in 1978. As a person suffering from polio and walking impairment, Wifalk wanted to be able to keep moving, even with her walking impairment. She presented her first invention to the public in 1965. The 'Manu-ped' development was a training device for people with physical disabilities. With Manu-ped, they could train their arms and legs as well as their coordination with each other. On the basis of Manu-ped's various training, devices for people with physically disabilities were developed in the following decades, and they are used today in the health service as well as in special sport schools (Sundberg 2010). Later on, in 1978, due to the worsening of her own impairments and the exhausting use of sticks, Wifalk presented the first model of a 'roller' or what was at the time called a walking frame. Supported by a state development fund, she located a Swedish company for the production of a prototype and, shortly after, mass production of the 'rollators' began (Svenskt Uppfinnara Museum 2016). The roller provided a simple solution to walking impairment and spurred social change in the lives of older people and those with walking difficulties as demonstrated in Figure 7.7. In the twenty-first century, Europe is taking the lead in using rollers with the Nordic countries and

Figure 7.7 Roller demonstration for health workers in Shanghai 2019.

Source: Hilda Rømer Christensen (photo).

Germany as leading nations. This connects to the emergence of recent individual and professional notions of 'successful ageing' as identical with individual mobility (Christensen 2021). Today, the roller in many forms and varieties serves as a walking aid primarily for the growing number of older persons in the Western world and is also emerging in China.

Gender smart innovations: Mothering on two wheels

Påhoj is a Malmö, Sweden, based company founded by parent and industrial designer Lycke von Schantz. Påhoj is a new bike seat that turns into a stroller quickly, combining biking and walking with children. The concept has been nominated for and received several rewards, including *Baby Product of the Year, Sweden 2020,* and *European Product Design Award 2019.*

The innovative concept was born from a master's thesis by parent and industrial designer Lycke von Schantz during her studies at the School of Industrial Design in Lund, Sweden. The concept integrates the design of bike seats and baby strollers, creating new mobilities for parents to walk and bike with their children in an easy and accessible way. Bicycling is for many urban citizens an integral part of their everyday life and, as Lycke von Schantz asks, 'Why should becoming a parent put an end to that?'.

As a mean of transportation, Påhoj accommodates a hitherto neglected business opportunity through its attention towards urban family patterns and lifestyles. It is an innovative invention, which enables women, especially, to maintain/gain a high level of mobility and freedom.

Research on transportation and transit patterns has documented gender differences in everyday life, with women who have family responsibilities or more complicated transit patterns employing cheaper commuter-travel alternatives (Singh 2019). In addition, women and mothers often travel with passengers, such as children, thus emphasizing the need for accessible and multiple-passenger transportation opportunities (www.pahoj.com).

Furthermore, these accessible experiences build upon everyday practices and can be seen as recurring travel patterns. From a climate and health perspective, biking is a pollution-friendly activity, and using the bike in companionship with children when exploring the city underlines a sustainable way to learn and acquire healthy habits from early childhood into adulthood. Following this perspective, the stroller combination with bike seat additionally accommodates back issues; parents are not forced to carry their children around from A to B, but can instead push them in the stroller, thereby protecting their backs from carrying a heavy weight.

Gender smart innovations: Mobike changing transport in urban China

'This mature car industry with a history of a century seemed to have failed to keep up with the development of technology, as well as the increasingly personalized demand from consumers. Hu thought of bicycles - a vehicle she loves and most

Figure 7.8 Mobike in Beijing 2017.

Source: Hilda Rømer Christensen (photo).

Chinese people have learned to use - as the most flexible, ecological means of transportation' (Hu Weiwei, in China Daily, 2016-12-15).

Mobike was one of the first shared bike companies in the world, launched and invented by a young Chinese woman, Hu Weiwei. Mobike may be regarded as a genuine bottom-up initiative aimed at addressing the needs and the search for new lifestyles among the Chinese middle class and, in particular, meeting a growing demand of urban (women) professionals with low salaries and no or restricted access to cars. In 2015, Hu Weiwei was a young female graduate with a background in car journalism. This contrasts with the general gender profile in innovation, where men dominate as technical inventors, entrepreneurs, and investors. Mobike and smart biking, with an equal appeal to men and women, has contributed to disrupting the gender-divided biking culture in China. Smart biking schemes seem to have the potential to change urban transport modes in China towards more biking and less car driving. However, the question needs to be asked: What is the gendered and diverse uptake of these bikes?

Gender smart innovations: The Moseka Traffic Robot

Road accidents are frequent in the Democratic Republic of the Congo (DRC) and many people are killed. To combat this problem, a team of women engineers at the Women's Technology Association (Wotec), designed a Traffic Robot, which speaks to both emotions and reason as seen in figure 7.9. It appeals to both adults

Figure 7.9 Traffic Robots in Kinshasa, PRC, exhibited in the Africa Museum, Bruxelles, 2019.

Source: Hilda Rømer Christensen, 2019 (photos).

and children, to car drivers, cyclists, and pedestrians. It is designed in the shape of a woman's body along with surveillance cameras and applies advanced AI robotics along with the local culture and names. Moseka means young girl in Lingea language. She is an imposing 2.9 metres tall and stands in a 1.10 metre base, weighing 160 kilograms. Moseka sings a popular song about road safety, which all Congolese children learn in School. Wotec aims to encourage female engineers in the DRC. Head of the group Therese Izay Kirongozi now hopes other countries will follow suit. For example, she would like to see these 'robots Made in Congo' in New York. 'That's my dream. I dream big', she recently told Radio Okapi (Izay 2014).

These cases of entrepreneurship have all developed innovative solutions to everyday challenges such as safety, sustainability, and inclusion. These innovative solutions strengthen mobility and smart transportation – especially for women and mothers – and illustrate a greater focus on diversity when it comes to navigating easily in traffic. Traffic and transportation are commonly associated with a masculine domain but these cases of gender smart innovation challenge this assumption through the innovative contribution made by women and through the inclusion of a broader range of consumers and users within the design and production.

Summary

We have analysed the field of transport and particularly the car culture as a gendered space and pointed to several issues that need attention in both past and present transport policy and employment. One of these is that the dominance of male agents has resulted in a culture in which groups of male politicians regard transport policy as a playground and a game that belongs to them. They enact masculinities related to the core virtues of traditional transport culture which are hard to challenge. We have provided cases related to preserving the privileges and 'freedoms' of private car owners and motorized road transport – cases where the older and more powerful members of the transport establishment regard female game changers not only as intruders in this unspoken, but also very established, culture.

Notwithstanding this, it is vital to look at how agency is possible and to rethink power as productive and as acting in many fields and in different discourses of masculinity and femininity. It invites an approach to the field of transport policy and practices with new methods that not only focus on text and talk but also take into account material and bodily experiences and affects as co-constructing the field (Lissandrello 2015; Adler-Nissen 2016; Lissandrello et al. 2016). We have demonstrated the potential in female entrepreneurship and also provided new methods of visual analysis of the data, as shown in Chapter 6.

In this volume, we have worked with Gender Smart Mobility as an updated analytical and methodological approach which seeks to avoid too simplistic and binary positions. While recognizing the need for analytical distinctions of discourses which seem still to be active in policy cultures, the notion of Gender Smart Mobility indicates that something new is emerging. Gender smart mobility indicates that new formations are underway, and that policy strategies which are often blurred and messy should address gender and diveristy in a more systematic way. The notion of Gender Smart Mobility which has been presented throughout this book carves out new avenues, which are open towards gender smart innovation and in intra-actions of humans and smart technologies. And which in addition recognizes a bold emphasis on diversity and inclusion of all groups.

Notes

1 **Barbara Anne Castle, Baroness Castle of Blackburn**, PC (*née* **Betts**; 6 October 1910 to 3 May 2002), was a British Labour Party politician who was a Member of Parliament from 1945 to 1979, making her one of the longest serving female MPs in British history. Regarded as one of the most significant Labour Party politicians, Castle developed a close political partnership with Prime Minister Harold Wilson and held several roles in the Cabinet. She remains to date the only woman to have held the office of First Secretary of State. Barbara Castle was the first woman to be secretary of state for transport. But was she also the best transport secretary Britain ever had? By Jonathan Bray 24 Oct 2018. City Monitor. https://citymonitor.ai/transport/was-barbara-castle-best-transport-secretary-britain-ever-had-4305

2 Cf. ministerial rankings in the UK, Sweden, Germany, and commissioner at the EU level.

3 The idea of transport policy and planning as a performative act has been applied by several scholars, but not reflecting agents as gendered, see also Lissandrello: Three performativities of innovation in Public Transport planning. In International Planning Studies, 2016.

4 According to Sonja Mikkelsen, who became the first female transport minister in Denmark in 1998.

5 On a study, based on keyword searches in relevant documents as well as a survey with local municipalities.

6 The term ecofeminism was coined by the French writer Françoise d'Eaubonne in her book *Le Féminisme ou la Mort* (1974). Ecofeminist theory asserts a feminist perspective of green politics that calls for an egalitarian, collaborative society in which there is no one dominant group. See Ecofeminism – Wikipedia. https://en.wikipedia.org/wiki/Ecofeminism

7 See also identification of current and future issues in the employment of women in smart mobility. TInnGO report, d. 9.1.2020 (authors: Michala Hvidt Breengaard (UCPH)Hilda Rømer Christensen (UCPH)Stine Pedersen (UCPH) Eglė Drungienė (SC)Rūta Kubiliūtė (SC)Simona Juknevičiūtė (SC)Iason Tamiakis (LEVER)Javier Moya (ITENE)Margherita Colleoni (ITENE) Mireia Calvo (ITENE) Microsoft Word – TInnGO_D9.1_Employment_Investigation.docx

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8 From the Covid-19 Pandemic to Gender Smart Mobility

This chapter examines the Covid-19 pandemic as an example of crisis and discusses its impact on transport. In particular, it takes up the challenges of the pandemic and smart transport, raising new questions about the social aspects of these changes and the need to identify knowledge gaps. In the chapter, findings from gender and diversity surveys and guidelines for a Gender Smart data collection are presented.

In the first few months of 2020, the world came to face one of the largest and most widespread pandemics in recent history. One by one, nations locked down to prevent the Coronavirus from spreading. Travel abroad was discouraged by most governments. Schools, workplaces, and leisure activities were closed. Instead, people around the world were asked to homeschool their children as well as work from home.

Not surprisingly, these responses to the Covid-19 pandemic had a strong impact on everyday transport, leaving roads almost deserted and reducing traffic congestion. In many ways, this made city life calmer and more quiet. In many parts of the world, public transport, in particular, was subject to various restrictions with reduced departures and fewer seats on trains and busses. Instead of using public transportation, people were encouraged to cycle or walk. The lockdown meant that many people had to rethink their transport options for everyday activities. As a result, several of the world's major cities measured a significant decrease in air pollution.

Although the Covid-19 pandemic emerged as a huge crisis at international, national and individual levels, it has resulted in reflections on how these new arrangements with regard to working life as well as transportation habits could lead to positive change towards a more sustainable future. Centre stage was the field of transportation with declines in air pollution directly pointing to a possible game change in the ways societies move populations around. For a short moment, the Covid-19 pandemic opened a policy window to a green transformation of transport and everyday travel routines. The hope was that urban residents would be willing to continue their new and more sustainable modes of transport.

This chapter has a twofold aim. The first is to discuss the Covid-19 pandemic as a policy window for greening and making smart transport and mobility. A second ambition is to address the social effects of the Coronavirus recommendations and restrictions that were implemented during the Covid-19 pandemic. In the chapter,

we ask: What are the lessons learned from the changes in transport and mobility in regions and cities around the world? What do the Covid-19 disruptions tell us about the willingness and possibilities for urban residents to change their travel habits towards a more sustainable path? And how do we apply the lessons learned?

In general, existing gender differences tend to be embolded during crises – be they economic, ecological, or war driven. Situations of crisis have been found to have a different impact in respect of gender as well as on minority groups. Some of the central issues are that information and recommendations are blind to different groups; this includes language. In the case of the Covid-19 pandemic, the recommendation that the infected person should isolate in a separate part of the home may be impossible in households where the home is small and many people live together. In particular, single parents might not be able to separate themselves from their children if they or a child becomes sick. If interventions are blind to these differences, there is a risk of little success – so problems are not solved. Moreover, some groups are left more disadvantaged than before.

Box 8.1   Gender and crisis

The Covid-19 pandemic is only one form of crisis. Other crises occur every day in different parts of the world. The climate crisis is leading to natural disasters, especially in the global south. These disasters hold gendered implications and often connect to difficulties with mobility. For example, in areas affected by drought, women and especially young girls are forced to fetch water further and further away. When the long distances mean longer transportation, often covered on foot, it also exposes women and girls to harassment and rape, especially in areas where there is conflict. Heavy rainfall also has an impact on women's workload, as they will need more time to collect water for household tasks after floods. The additional time burden will, to an even greater extent than before, prevent women from seeking education as well as participating in public life (Oldrup & Breengaard 2009).

The Covid-19 pandemic showed how gender differences in the labour market have an impact on who is hit the hardest when some sectors lock down while others remain open. The gendered division of labour in the home also has implications for those who take on care tasks when, for example, schools and day care institutions are closed. Likewise, women and men are affected differently when transportation is restructured and restricted, as has been the case during the Covid-19 pandemic. The public and private sectors were disproportionately hit – while the public sector was 'rescued' many private businesses suffered. In particular, smaller private entrepreneurs where there is an over-representation of women, such as hairdressers, were hit hardest by the restrictions. Small transport companies, such as taxi firms, often run as family businesses, were also affected when people reduced their travel. This had an impact on these families' economic situations.

Focusing on the field of transport, in this chapter, we investigate how the restrictions that were put in place to prevent the spread of Covid-19 impacted commuters in different ways. Although the restrictions were largely the same across and within national borders, the effects on people's lives depended on their ability to follow the recommendations. We will explore whether the pandemic increased the potential for new transportation models that acknowledge differences in needs in respect of gender, family, and job functions. Thus, the twofold ambition of this chapter might be seen as two sides of the same coin. Success in creating a green transition, as we have argued throughout the book, is dependent on whether initiatives and solutions meet the needs and opportunities of different groups of people. We start with the Covid-19 pandemic and its effects because we assume that diversity becomes galvanized in such a moment. This applies both within and outside situations of crisis. But perhaps the need to think about diversity becomes even more visible in moments of crisis.

Same restriction, different impact

Knowledge of how epidemics affect gender in different ways is an often overlooked, albeit important, step in understanding the primary and secondary effects of the epidemic on individuals and groups of people. This applies to the actual figures for infected and dead, as well as the effect of campaigns and government intervention. Socially and economically, there are hidden gendered effects in everyday life as well as in the long run. In most countries, messages about the Covid-19 pandemic have been addressed in the same way to the entire population, regardless of gender, ethnic background, or social class. The question, however, is whether there are gendered impacts of the crisis as well as of the recommendations that followed the pandemic. This might also include differences in how people understood and followed the guidelines.

Public transport is a space where many people meet, stand close together, and touch the same buttons and seats – all conditions, we learned during the Covid-19 pandemic, that were putting us in danger of infection. Therefore, in most countries, specific recommendations and restrictions were put in place regarding use of public transport, from completely avoiding buses and trains to travelling outside of rush hour or cycling and walking instead whenever possible. These restrictions on collective mobility applied to the population as a whole, formulated as of common interest. The idea, probably, was that we were all in the same boat – Covid-19 does not distinguish among gender, income, or geography. Taking these differences into account, we can ask questions about who had the opportunity to avoid public transport and, more importantly, who did not? Who could not walk or cycle instead? Who did not have the opportunity to work from home or take the car?

While Covid-19 attacks 'everyone', people who need to take public buses or trains on a daily basis might be more exposed to infection than people who have the opportunity to work from home or who can take the car. As stated above, the 'people' using public transport are more often women. This makes gender a difference with respect to who is more exposed, and who gets sick. Furthermore,

reducing departures and seats on public transport will affect some people's everyday mobility – the time they spend on transport, the routes they take – more than others. While Covid-19 certainly affects us all in one way or another, there are groups whose daily lives have been challenged more than others due to restrictions in transportation.

One way to pin down these differences might be to think in terms of different mobility types. That is, different people who perform a certain form of mobility every day. In the following, we show four imagined examples of people and their everyday mobility. These are set up to illustrate how people are affected – or not affected – when public transport is discouraged, reduced, or changed. The four mobility types are defined to cut across variables of gender, age, class, ethnicity, and geography. We call them Hannah, Finn, Lisa, and Gezim.

Hannah

Hannah is 82 years old and lives in a small town. After her husband passed away two years ago, she now lives alone. She does not want to use the various online shopping options. In any case, she does not have a computer. The nearest grocery shop is in the larger neighbouring town which is 10 km from Hannah's residence. She goes there a couple of times a week to shop. Before Hannah's husband passed away, they always used their car to get around. Hanna has a driving license but has little experience of driving a car, as her husband was always the driver with Hannah the passenger. Because of this habit, she does not dare to drive the car herself. Hannah has been dependent on public transport, especially buses, since her husband's death. During the Covid-19 pandemic, the authorities recommended that particularly vulnerable people should refrain from using public transport. Due to her age, Hannah is someone with an increased risk if infected by the Coronavirus. She is very nervous about the situation but sees no other way than to continue using the bus.

Finn

Finn is 52 years old, married and lives in a suburban residence close to a large city. He works as a self-employed carpenter and drives his car to and from work. The nature of Finn's job does not allow him to work from home and his working life has been largely unchanged during the Covid-19 pandemic, although with certain restrictions when dealing with customers. His daily transportation has become easier as there are fewer cars on the roads and less traffic congestion.

Lisa

Lisa is 35 years old. She is a single mum with two children aged four and seven. Lisa and her children live in the centre of a big city. She works in a government department and her children respectively attend kindergarten and school. Lisa normally accompanies both children by using a cargo bike. She also cycles to and from work every day. The lockdown has meant less traffic and more space in the cycle

lanes. This has encouraged her oldest daughter to cycle by herself to school, which is located 1 km from their home. As Lisa now only has to accompany her youngest daughter, she has fewer trip chains to do every day. She hopes that it will be possible for her oldest daughter to continue to cycle when traffic returns to normal after the pandemic.

Gezim

Gezim is 12 years old. He lives with his parents and two siblings, aged six and eight, outside a big city. The family immigrated from another country when Gezim was a young child. Gezim and his siblings go to a private school in the city centre. Both of his parents go off to work early in the morning and Gezim is responsible for accompanying his siblings to school by public transport. The trip is first by train and then by bus. The Coronavirus restrictions meant that seats on the train must be booked every day. At first, it was hard for him to remember as well as to find out how to book the seats. He is now booking seats at the ticket office at the station, but as the booking must be done every day, it has meant that they spend significantly more time on the journey.

These four imagined stories show how central mobility is in our lives as well as the various forms of transport that different people use daily. It is not surprising that they are affected differently during a pandemic when the transport system is reorganized. One can read the stories as concrete examples of the different impacts the Coronavirus restrictions had on various people's transportation. Yet, they are also examples that go deeper than that, simply because they illustrate the many variables – such as gender, age, geography, mode of transport – that play together in people's daily mobility. That is, the stories highlight how intersections between these variables play a key role in defining transport opportunities and needs. If Finn had been Hannah, the situation would have been different – he would probably continue to drive the car. If Gezim lived where Lisa lives, he and his siblings would not have to take the train and although he probably would not use a cargo bike, he could avoid the daily seat booking. The Coronavirus restrictions would have another meaning for him and his siblings with regard to everyday transport. Thus, the stories can be viewed as a lesson of how variables can rarely be seen in isolation when looking at transport. Age alone ignores the gendered differences and gender alone does not determine people's mobility options. While these stories illustrate the different impacts of the same restrictions, they also tell us that we need to act on diversity. And to act we need knowledge. There exist studies on gender and diversity in situations of crisis, as well as studies on transport. Although the Covid-19 pandemic is a recent crisis, research on the gendered dimensions of the transportation restrictions has been conducted.

Mapping knowledge on Covid-19, gender, and transport

During the Covid-19 pandemic, quite a lot of funds were set aside to collect data in the knowledge that the pandemic constituted a unique space for acquiring knowledge about population behaviour. One of the areas that studies addressed was

transportation and mobility. Among these were studies that had a specific view on gender differences (see, e.g., van der Kloof & Kensmil 2020). In the following, we list some of the findings provided by a number of organizations on the impacts of Covid-19 on gender and transport.

UN Women has collected data from various sources (police, media, and human rights organizations), which show the impact of Covid-19 on women's safety in transport. The data reports increased violence and discrimination towards women on public transport during the Covid-19 outbreak. In Latin America, health workers, of which many are women, as well as LGBTIQ+ people experienced more safety issues in public transport than before the pandemic. One reason for the heightened risk of violence was the empty streets and decreased number of people; thus, the possibilities for help on public transport decreased during the pandemic (UN Women 2020). Furthermore, UN Women reports that the decline or shut down of public transport has had a greater impact on women. For example, in some African countries bus services, which are mostly used by women, have reduced their capacity by up to 60% leaving women on isolated roads or simply cut off from their usual mobility options (UN Women 2020: 3).

A study in the Netherlands (van der Kloof & Kensmil 2020) revealed other gendered differences in the impact of Coronavirus restrictions on transport. In particular, differences were found in relation to job functions, which continued to be open or were closed down during the pandemic. While more than half of the male workforce continued to work during the lockdown in the Netherlands, the same was true of only 40% of women. Furthermore, 21% of women had to stay at home or were furloughed compared to 10% men. As the authors explain, these imbalances are due to the gender-segregated labour market, where men are more often employed in technical professions such as construction jobs, mechanics, or drivers, while women are in jobs as beauticians, hairdressers, or cleaners (van der Kloof & Kensmil 2020: 3). Moreover, the study found that, in particular, first-generation migrant women with a non-Western background, less educated women, and single mothers experienced increased mobility challenges during the Covid-19 lockdown because these groups had few alternatives to public transport.

In a technical brief on Covid-19 and gender, the United Nations population Fund (UNFPA) highlights the intersections of gender, work function, and transport as crucial parameters of mobility during the pandemic. Care and health work cannot be performed from home and the increased pressure on the healthcare system has meant another burden on health workers. On a global scale, women make up 70% of the health workforce. Looking at this together with women's greater dependency on public transport, the pandemic has not only meant that many women's everyday mobility has been hampered but also that they have experienced an increased risk of infection both in front-line interactions with those who are sick, and also in commuting to and from work (UNFPA 2020).

A Policy Note by the World Bank Group has similar findings. Yet, the Policy Note mentions that in other job functions, it is men's over-representation that entails an increased risk of infection. This is the case in the transport industry where male-dominated functions such as bus or taxi drivers, who are in constant contact with many people, have put many men at increased risk. Also, men have an

increased risk of infection due to their role as paramedics transporting the sick (World Bank Group 2020).

These various policy briefs and notes collect and present knowledge about gender and the impact of the Covid-19 pandemic in the field of transport. The sources are provided by various institutions as well as by studies conducted by researchers around the world. We recommend checking their literature references for more specific and context-specific findings. Below, we provide a more in-depth example of a study on Covid-19, gender, and transport in the Danish context, what it found and what it did not find.

The Covid-19 potential for greener transport

In the period June–August 2020, the research centre at Copenhagen university, Co-ordination for Gender Research (CGR), collected information on Danes' transport behaviour. The purpose of the CGR survey (595 participants[1]) was partly to investigate how the Covid-19 lockdown had affected Danes' patterns of transportation, but also to get an impression of the respondents' preferred transport modes in the future. In accordance with government advice, Danes used public transport less, as can be seen in Table 8.1.

We know that mobility was limited during the lockdown and that there was a decrease in the number of kilometres travelled (DTU Transport 2019, 2020: 22). Scholars predicted that the repercussions of the Covid-19 lockdown could result in a permanent decline of up to 10–20% in people's use of public transport (Teknologiens Mediehus 2021). The CGR survey showed that more Danes (23%) took up car driving during the Covid-19 lockdown. Actually, car driving appeared to be the mode of transport that was most split during the lockdown. While 32% of participants stated that they had driven in their private car a little more or much

Table 8.1 Reported transport modes during the Corona lockdown
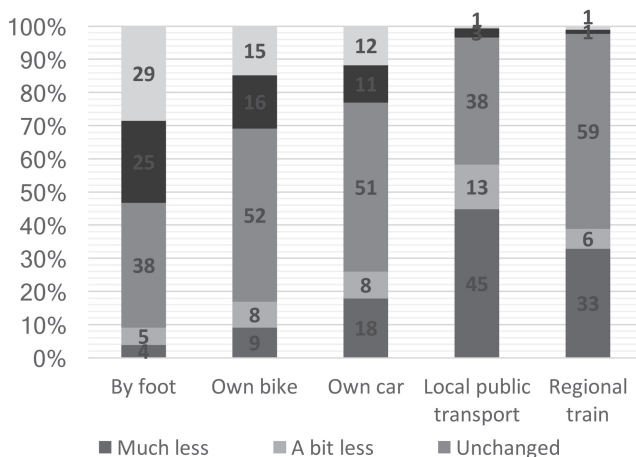
Table 8.2 Daily transport mode: before the Corona lockdown, and preferred in the future
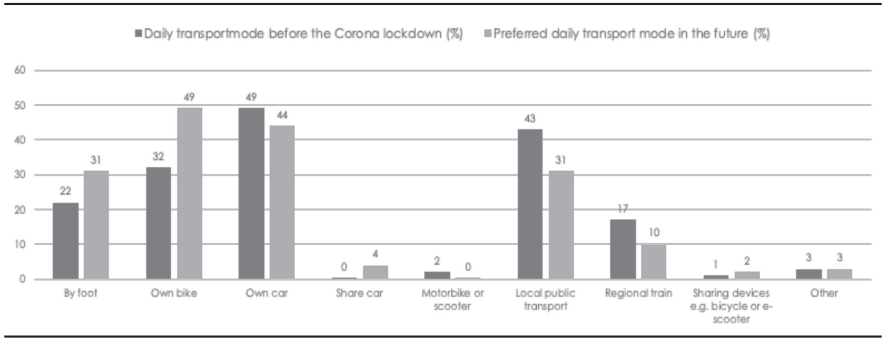
more, 38% noted that they had driven in their car a little less or much less during lockdown.

The survey also revealed that the transport modalities where usage increased the most were the non-motorized: walking went up by 54%, while cycling increased by 31%. As seen in Table 8.2, of those who had already changed their travel behaviour, the survey showed that a large proportion was prepared to continue their non-motorized transport modes (cycling 72% and walking 48%). The study showed that while decreased use of public transport could be interpreted as a movement towards private cars, it also held a potential for new greener transport habits.

Yet, the study found class (educational) differences in those who were willing to continue their greener travel habits. Table 8.3 illustrates how those who were vocationally trained seemed to be more reluctant to choose the bicycle as a preferred future transport mode and people with medium-term education were especially inclined to travel by car. These differences clearly call for further investigation into the differences in various social group's mobility opportunities and needs so that actions can be created to promote sustainable mobility.

Table 8.3 Transport mode one would prefer to make use of in the future (%)
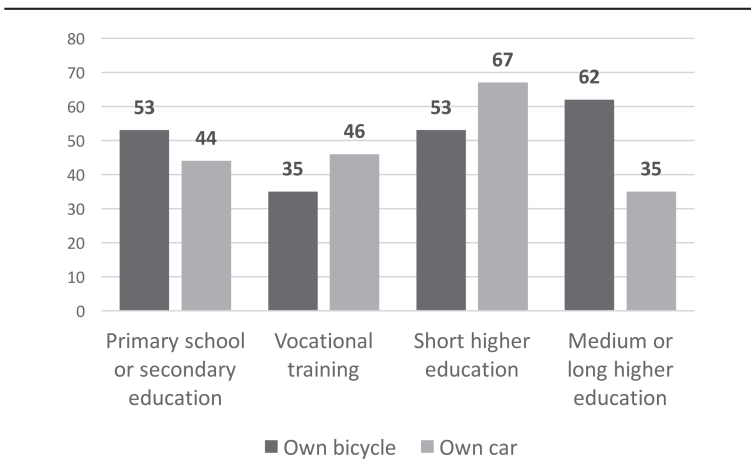
Furthermore, the survey design was set up to discover if differences in women's and men's travel behaviour were amplified during the Coronavirus restrictions on transport. We know from descriptive data that before the pandemic men used a higher share of their total trips (21.4% vs. 25%) and a higher share of their total travel time (23.4% vs. 27.2%) to travel to work or education than women (DTU Transport 2020: 23). This tendency is seen across Europe where men have longer travel times to work than women (Wachter & Holz-Rau 2022). Yet, the CGR study found no difference in how often men and women travelled to work or study before or during the Covid-19 lockdown, nor in their preferred future transport mode.[2,3]

We know from the annual report from DTU Transport that mobility went down for everyone during the lockdown. In 2020, women on average travelled 30.9 km per day, while men travelled on average 38.2 km per day (DTU 2020: 22). In 2019, this figure was higher for everyone, but there was still a descriptive difference in kilometres travelled: women travelled on average 34.2 km per day and men travelled on average 42.2 km per day (DTU 2019: 22).

A media analysis in the Danish context (Christensen et al. 2020: 11) showed that women more often than men were portrayed as the providers of home-schooling in the Danish media during the lockdown.

From Covid-19 to Gender Smart Mobility

Situations of crisis often put inequalities at the forefront. The Covid-19 pandemic has had different impacts on different people, hitting some parts of the population harder than others. While the crisis on a global as well as at national and individual levels has had very severe impacts, it has also created spaces for new insights, new ways of acting, new forms of policymaking and planning as well as new approaches to everyday life. The question is what and how to learn from the new ways of structuring our societies.

The restrictions which came in the wake of the Covid-19 pandemic have had major implications on the transport sector in most countries around the world. Work has been relocated, public transport has been reduced, and green transport such as walking and cycling has been promoted.[4] Around the world, trips by bicycle have become a new alternative to public transport. Some cities have experienced increased use of shared micro-mobility services, such as bike sharing schemes and e-scooters. In Beijing, China, bike sharing increased by 187% during the pandemic, pointing to the promises of micro-mobility solutions in the future.[5] While the pandemic has presented certain challenges associated with the restrictions on mobility, the changes in people's everyday transport use have proved to have a positive effect on the climate. Less private motorized transportation during the Coronavirus lockdown meant that air quality in the world's largest cities significantly improved (Vega et al. 2021).

The changes in transportation during the pandemic show that it might hold the potential for new sustainable transport behaviour. Many citizens have already changed their transport habits, and in some parts of the population, there is a willingness to continue with these habits. Yet, the willingness to use green travel modes

does not always go hand-in-hand with the actual opportunities to do so. As this chapter has showed, there are great differences in the opportunities and willingness to use green travel options. A more pessimistic view of the effects of the Covid-19 pandemic on transport is that more people will in the future continue to avoid public transport, especially during rush hours. The change in people's everyday mobility behaviour away from public transportation during the pandemic may lead to a shift towards increased use of individual modes of transport, including private cars (Christidis et al. 2021).[6] In fact, some Chinese cities already report a 30%–40% shift to private cars after they reopened society.[7] Also, the burden of the pandemic on public transport, the increased costs associated with the restrictions, as well as the lower number of users might lead to a situation where transport operators across the globe further reduce their services. This scenario will affect the safety and economic viability of public transport with negative effects not only for the climate but also for equality in society (UN Women 2020). Crises, both previous ones and the Covid-19 pandemic, carry a huge risk of creating even greater inequality in society between those who have opportunities and those who do not (van der Kloof & Kensmil 2020).

While from the viewpoint of the climate agenda it was suggested that the pandemic could provide a window to greener everyday mobility in the future, with a call for a green reopening of societies after the pandemic, the Covid-19 crisis has also opened up the opportunity for a rethink/relocation of transport policies in terms of greater equality. The fact that a large number of essential work functions have continued to use public transport under Coronavirus restrictions has meant that several cities have taken steps to meet the specific needs of these users. During the pandemic, measures have been put in place to promote gender equality in transport, such as providing free access to public transport for health workers or tailoring transport services for frontline personnel by working with public institutions and hospitals. In Berlin, Germany, the city's public transport operator, The Berliner Verkehrsbetriebe, restructured its transportation services within a few days to meet the needs of the city's essential workers, including an offer of free transportation.[8] In Abu Dhabi, United Arab Emirates, the operator of public transport, The Integrated Transport Centre, launched a new on-demand transport service to meet the needs of the city's health professionals in just six days. The service was quickly expanded as demand proved to be even greater than first expected.[9] New collaborations between the public and private transport sectors have also occurred. To alleviate the pressure on public transport services, private transport operators, including ride-sharing schemes (e.g., MOIA, FreeNow, Lyft, and Uber), have in some instances offered extra services at night or during off-peak hours.[10]

These measures show that change can happen. And it can happen fast. In the short term, during the pandemic, these changes have alleviated problems that arose due to the restrictions on public transport. From a long-term perspective, the various new on-demand services with a focus on easier mobility for users of public transport will have a positive effect, not least for women – for example, by offering more efficient trip chaining. Urban traffic will change post-Covid-19, but how and to what extent these changes will happen is up to transport policy and planning.

A key question for the transport sector is thus how to maintain the positive re-structurings and actions on transportation that have occurred during the Covid-19 pandemic.

Returning to the smart city and Covid-19: the concept of a '15-minute city' has been raised as one way forward post-Covid-19. The 15-minute city is one version of the smart city where local proximity is a priority: a city where people can walk or cycle to carry out their daily activities.[11] While the concept of the 15-minute city had already been defined by the professor at the Panthéon-Sorbonne University, France, Carlos Moreno in 2016, the Covid-19 pandemic has really set this city model in motion (Moreno et al. 2021). For example, the city of Paris, France, has adopted the '15-minute city' vision as a new local mobility model, planning the city's services and workspaces so that the population's journeys are shorter (Pozoukidou & Chatziyiannaki 2021). The 15-minute city might be seen as a break with dominant mobility rationales: 'mobility is good, more mobility is better'. During recent decades, policymaking and planning were based on the mantra of more and faster mobility. Mobility was central to the functioning of society: we had to move all the time to get the economy running. Are we facing a transformation now? Did we learn from the Covid-19 crisis how to undergo a transformation to more sustainable mobility? The labour market still needs people to move around for jobs. The travel industry is a big part of these dominant rationales about mobility mentioned above and so is the car industry. Moreover, the rationale of mobility as good at the individual level is tied to narratives of the good life and happiness. We take a break from everyday life by traveling 'somewhere else'. We go abroad to experience 'something else'. Not everyone has an equal opportunity to realize these dreams of mobility, but the narratives are nonetheless in people's heads. The question is: is it possible to reach a sustainable future without redefining the basis of how we understand mobility? Covid-19 was in many ways a break from the big mobility narrative and a turn towards a more local orientation. Many saw the attraction of working from home and more people vacationed in their home countries. Again, the question is whether this new local orientation is able to stand up after Covid-19? This question can be woven into the discussion of who constitutes the standard for today's transportation planning. As we discussed in Chapter 4, feminist perspectives on transportation have pointed to a male, middle-class, and fully mobile person as the point of departure for much transport planning. An older yet still valid argument is to strive for the ways that women travel as a more sustainable standard (Lander et al. 2022: 66). In most countries, women travel more sustainably. In India, 84% of women in urban areas in 2011 took low-carbon modes of transport to and from work. In many cities, women walk more (UN Women 2020). What would happen if we started planning our transport infrastructures based on this standard?

Importantly, actions to promote sustainable transport must consider the differences and inequalities between people in society if they are to succeed in the long run. We need more gender- and diversity-sensitive data. It is simply too difficult to take action when no one knows anything – just as it is problematic to change the population's transport modes without taking into account people's actual – and different – life circumstances. When setting up restrictions and actions in the field of

transport, it is therefore crucial to consider the socio-cultural differences that exist in the population. The Covid-19 pandemic offers a green window for change only insofar as the opportunities that people have for green mobility are maintained, prioritized, and improved.

Box 8.2   Questions for reflection

How did the Covid-19 crisis hit your workplace?

Is it ready for another crisis?

What gender inequalities did you experience during the Covid-19 crisis?

Have you changed your transport habits following the Covid-19 pandemic?

Notes

1 The data collection was done electronically and disseminated through campaign boosts on Facebook as well as through a number of municipalities' home and Facebook pages.
2 As we first used an explorative approach, we adjusted the significance threshold to account for false positives. We interpreted 0.05 as an indication level and 0.005 as significance level when testing for correlation. This is in line with general recommendations from statisticians that 0.05 is a weak evidence threshold, and to compensate for the preliminary explorative approach that increases the risk of false positives.
3 We found an indicative difference that persons with at least one parent not born in Denmark were more likely to prefer local public transport such as buses, the metro, or s-trains in the future. No conclusion can be made though, because of a too high *p*-value (0.0244). More data are needed on the subject.
4 https://www.itf-oecd.org/sites/default/files/respacing-cities-resilience-covid-19.pdf
5 https://nextcity.org/daily/entry/covid-19-reveals-how-micromobility-can-build-resilient-cities
6 https://pro.ing.dk/mobilitytech/article/trafikforsker-efter-corona-kan-10-20-procent-have-forladt-kollektiv-trafik
7 https://www.c40knowledgehub.org/s/article/Public-transport-after-COVID-19-re-building-safe-and-connected-cities?language=en
8 https://www.masstransitmag.com/alt-mobility/shared-mobility/article/21135013/via-transportation-10-cities-that-have-redefined-public-transportation-during-covid19
9 https://www.thenationalnews.com/uae/transport/abu-dhabi-launches-free-bus-service-for-healthcare-workers-1.1003882; https://www.masstransitmag.com/alt-mobility/shared-mobility/article/21135013/via-transportation-10-cities-that-have-redefined-public-transportation-during-covid19
10 For examples, see https://www.masstransitmag.com/alt-mobility/shared-mobility/press-release/21131637/via-transportation-viavan-and-bvg-introduce-dynamic-mobility-solution-for-essential-workers
11 See also https://www.15minutecity.com

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Epilogue

Gender Smart Mobility as a Game Changer

This book recognizes the necessity to focus on the social – gendered and diverse – aspects in the creation of green mobilities in the future and today. Without a view of the users of transport systems and the plurality of these users, the green transition will not be realistic and succeed. Otherwise new inequalities will be created between those who are capable and those who fall behind; between those who can afford to choose and use sustainable transport modes and those who cannot; between those who are able to reduce their motorized travel and those who need to go by bus or car every day. Spatial planning, transport, and mobility are involved in new challenges for various groups today and we need to address these challenges in ways which are both equally sustainable and climate friendly. That is, the approach of *governance* for integrated and coordinated transport planning; a holistic *view* on strategies for increased sustainable travel and transport; to focus on sustainable mobility practices related to *culture, norms and attitudes*; and to identify and enhance knowledge and skills among citizens. We are in a time where we must take the challenges of climate change seriously. The seriousness raises questions about whether we can continue along the same paths or whether an actual game change is needed. In this book, we have argued for the latter.

We see *Gender Smart Mobility* as a vital pillar in the making of smart cities and sustainable societies and as a vital component of climate-friendly transport policy. Passenger transport systems represent the main backbone of society and have a crucial role to play in assuring any country's well-being and economic functioning. Gender smart mobility stands as a critical paradigm, which highlights the structural inequalities in terms of privilege and disadvantages related to gender and other categories in transport and mobility.

At the same time this volume suggests Gender Smart Mobility as a term and perspective that cuts across innovation, production, and consumption, accentuating new ideas of the smart city and of smart mobilities. Gender Smart Mobility implies a more creative and sensitive approach to diversifying categories, such as gender, age, income, and ethnicity, and highlights the imperative to transcend existing silos of city planning and transport policy.

Indicators and performance measures have been vital to the development of both sustainable transport and gender equality in general. The Gender Smart dimensions developed in research and emphasized in this book project, brings the

two fields of transport and gender equality together and allows for new synergies and intersections between them. It opens a policy window for Gender Smart Mobility to be fully integrated into future gender equality and transport strategies.

Gender Smart Mobility is defined according to five dimensions, towards which to measure any transport modality and devise. Accordingly gender smart mobility should meet the following requirements of being: (a) *Inclusive*, (b) *Affordable*, (c) *Effective*, (d) *Attractive*, and (e) *Sustainable*. While these dimensions seem comprehensive, they indicate and ensure a focus on gender- and diversity-sensitive assessments, which are often lost in existing approaches.

We have presented the concept of Gender Smart Mobility to prominent politicians and experts around the world. Their answers to this notion and its underlying indicators show that changes are underway. While there is by 2023 plenty of evidence, that policy and planning of transportation are still in a circuit of knowledge produced by a growth-oriented technical fix placing the car on the top, more and more cities acknowledge the need to support other forms of non-motorized transport. The ideas of sustainability and bike ability in combination with a decent, reliable public transit system are what many smart cities are aiming at in the twenty-first century. The need for smart mobility as highly integrated in climate change solutions has lately become a hot policy topic, not least generated by the younger generation's revitalization of critical social movements where young women are up front. These voices are promising for a game change in the circuit of gender and diversity in transport and mobility as well as for a fresh and more diverse knowledge production. We need to do transport and mobility policy and planning in new ways. This book is part of this endeavour.

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Note: *Italicized* pages refer figures, **bold** tables and with "n" notes in the text.