Citizen Centered Decarbonization of Urban Mobility in Post-Socialist Cities:

A Comparative Analysis of Tallinn and Skopje

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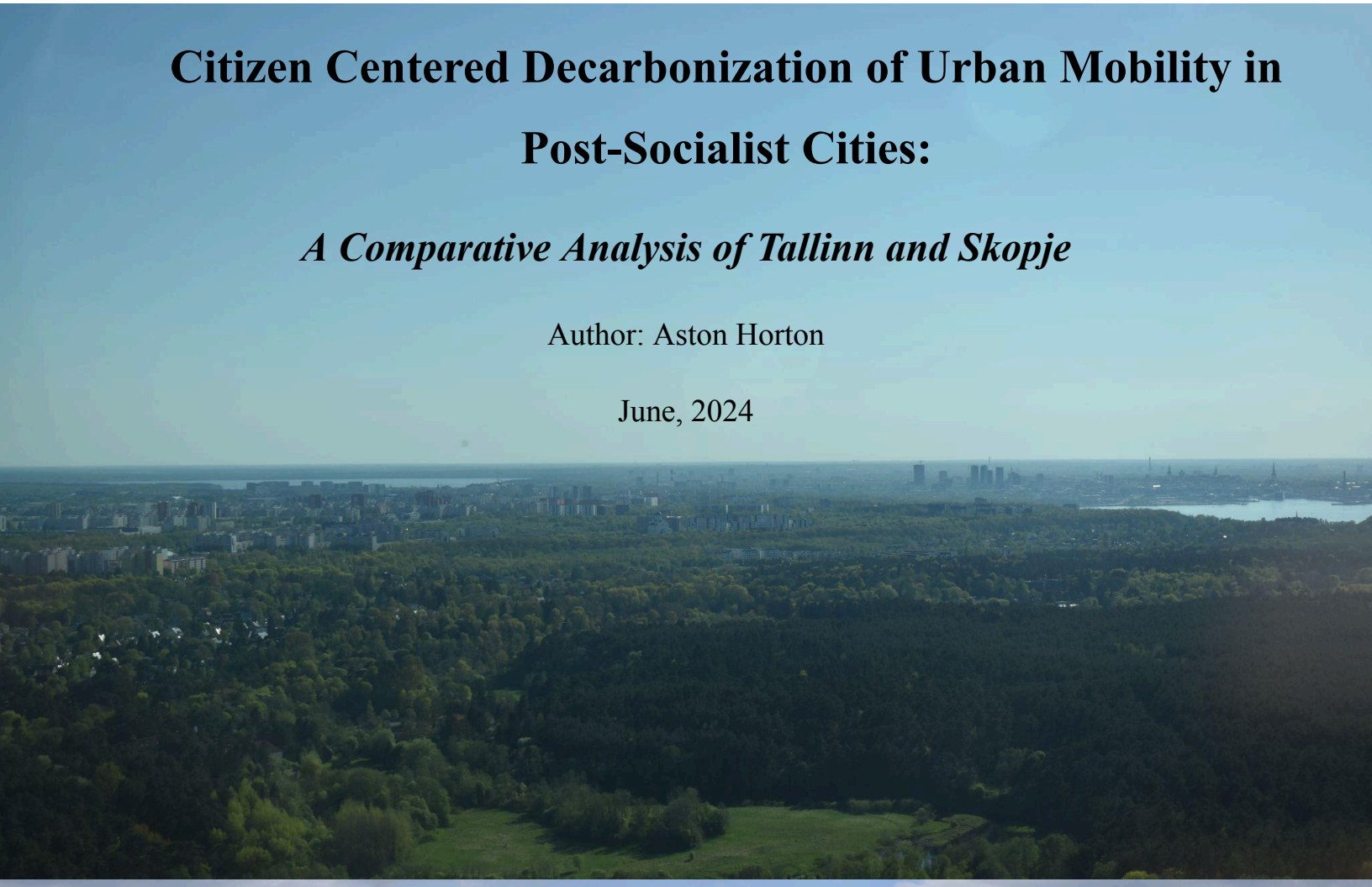
June, 2024



Centre international de formation européenne

Master in Global Energy Transition and Governance 2023-24

Master's Thesis

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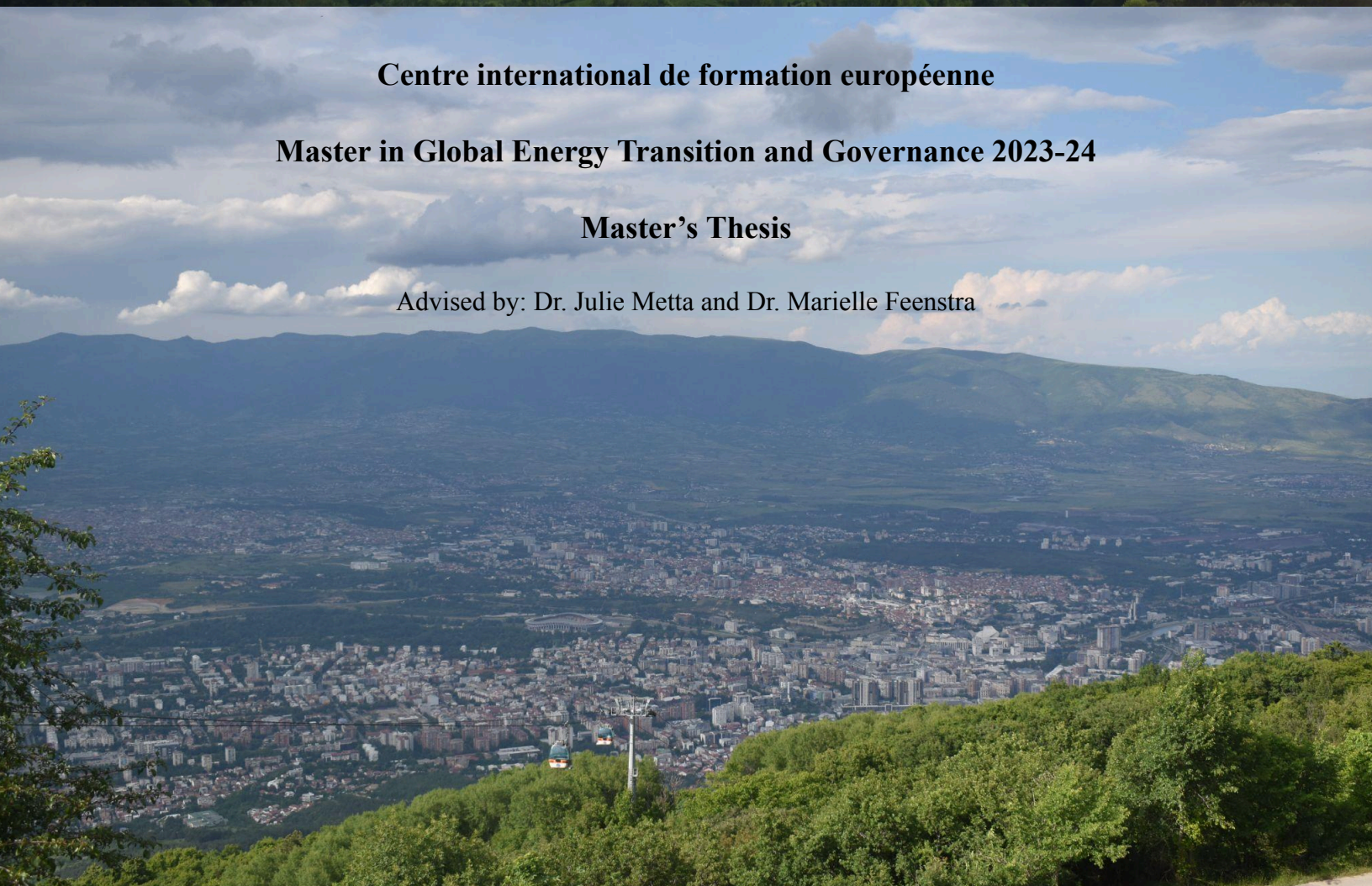

Abstract

Tallinn and Skopje are two eastern European capitals with unique but comparable histories who have recently diverged on their trajectories in the decarbonization of their urban mobility systems. While each struggles with increasing car usage, urban sprawl, and overcoming infrastructural deficiencies, both have a positive direction outlined through different levels of policy to overcome these challenges. Nevertheless, induction of the cultural shift needed to meet the lofty targets set by Europe, the national level, and themselves requires adjustment of policy development and implementation better suited to citizens' needs within the urban context.

This study identifies citizens' needs in the two cities through the reapplication of the bottom-up Availability, Accessibility, Acceptability, and Quality framework from the health sector to the urban mobility sector. Europeanization is evaluated as a top-down process in conjunction with multilevel governance tying the analysis together to help identify where policy shortfalls occur. In doing so, an indicator table is born, with ratings developed for each city based on their policies and implementation. Data is drawn from a breadth of sources: policy, literature, interviews, and observations. In doing so, the research is able to answer the question: *how are citizen's needs considered in the policy processes of decarbonizing urban mobility in Tallinn and Skopje?*

A major contribution of the study is the in-depth historical analysis of each city, conglomerating historical context in a way that had not been previously done with Tallinn nor Skopje. Additionally, the construction of the theoretical framework and methodology laid the groundwork for future research of citizen-centering in urban mobility policy processes, particularly in urban contexts which lie in understudied regions of the world. Results of this comparative analysis revealed that Tallinn and Skopje have not diverged as rapidly as may seem, despite different levels of influence and funding from Europe, and that each is able to help the other en route to addressing the challenges identified through the theoretical framework. The end policy recommendations address the resolvable downfalls of urban mobility policy and implementation, providing individual, cooperative, and European level recommendations.

Table of Contents

Summary of Images, Figures, and Tables

List of Abbreviations

AAAQ - Availability, Accessibility, Acceptability, and Quality
AM - Active Mobility
BRT - Bus Rapid Transit
CEE - Central and Eastern Europe(an)
CIVITAS - CIty-VITAlity-Sustainability
EC - European Commission
EP - European Parliament
EU - European Union
JSP - Javno Soobrakajno Pretprijatie Skopje; in English: Public Transport Enterprise Skopje
km - Kilometers
KPIs - Key Performance Indicators
MaaS - Mobility as a Service
MLG - Multilevel Governance
NGOs - Non-Governmental Organizations
N.Macedonia - Republic of North Macedonia
PPP - Public Private Partnerships
PnR - Park and Ride
PM - Prime Minister
PT - Public Transportation
SFR Yugoslavia - Socialist Federal Republic of Yugoslavia
SUMI - Sustainable Urban Mobility Indicators
SUMP - Sustainable Urban Mobility Plan
SUTP - Sustainable Urban Transportation Plan
TEN-T - Trans-European Networks
UN - United Nations
UNFCCC - United Nations Framework Convention on Climate Change
USSR - Union of Soviet Socialist Republics
WB - Western Balkans
WBCSD - World Business Council for Sustainable Development
WW1 - World War One
WW2 - World War Two

Introduction

The transportation sector is the second largest contributor to carbon emissions worldwide [1]. With the global trend towards urbanization, cities can play a significant role in reducing climatic impact through well-designed public transport and active mobility infrastructure. Integrating citizens' needs into policy and planning processes is crucial to motivate uptake of more sustainable urban mobility options. These processes have been studied extensively in North America and Western Europe, who are simultaneously the primary contributors to global emissions and further entrenched in their mobility pathways; less attention has been paid to the rest of the world, which has a greater capacity to change direction in urban mobility development. Two Eastern European capitals, Tallinn and Skopje, provide an interesting comparison of urban mobility development because of their recent socialist history, proximity to EU politics and funding, and high potential to implement necessary changes. Research objectives of this study involve evaluating how citizens' needs are addressed in decarbonization of urban mobility in case study cities through policy creation and implementation, with extensive consideration given to historical political atmosphere and urban development. To do so, this study develops a framework which can be applied to any urban context.

Motivation

Transportation accounts for a significant amount of global emissions, largely attributed to widespread usage of the internal combustion engine [2]. Though recent discourse on mobility decarbonization has emphasized the effect of air travel, road passenger vehicles account for 45% of transportation related emissions worldwide [3]. In countries who have already begun their decarbonization paths in the electricity and heating sectors, transport additionally accounts for a greater share of emissions and of fossil fuel consumption. Expressive of this fact is the European continent; a recent publication by Enerdata evaluating 27 European Union (EU) Member States, 9 Energy Community members, and Switzerland, revealed that the share of transport in CO_2 emissions was 30% and in final consumption was 31% as of 2022 [4]. Contrary to other sectors, emissions in the transport sector are continuing to rise while energy efficiency improvements were effectively stalled by the COVID crisis. All of the good and the bad are exemplified in cities, where dense populations and economic centers demand robust infrastructure to support people that live and work there. Cities account for 2% of the world's surface area, 60% of

emissions, and 78% of energy consumption [5], and are therefore placed on the frontline in the battle against climate change.

Europe is one of the most urbanized regions globally [6], and a lighthouse region when it comes to urban planning, quality of life, and sustainable city development. The continent is uniquely placed in the energy transition as it is host to the EU, the only supranational governance system with concrete political power over evolution of national and municipal policy below it. From the top down, the EU has reinforced importance of cities through the Green Deal [7], the overarching set of policy initiatives designed to mobilize the EU's green transition, and other related policy measures[1]. These policies especially emphasize urban mobility in decarbonization and just energy transitions for cities, which can better affect bottom-up shifts in these policy areas. Although transposition of policy from the European level is difficult, an emphasis has been placed on citizens in the wording of policies. Ensuring citizen-centering is the European Pillar of Social Rights [8], policy intended to build a fairer Europe, which recognizes transport as an essential service[2] [9].

Despite positive developments in mobility policy direction at the European level, a lack of an EU-wide uptake of sustainable urban mobility plans (SUMPs) has set back progression at the city level and affected citizens for whom infrastructure and policy is developed, as illustrated by the aforementioned Enerdata report, finding that transportation emissions are still rising [4]. With local infrastructural and global geopolitical challenges of electrifying vehicles, including grid modernization and critical mineral sourcing, it shows that more significant societal changes need to be uptaken in order to accelerate the path to decarbonizing urban mobility. For example, shifting habits to public transportation (PT) and active mobility (AM) options and increasing modal shares of these environmentally friendly modes of mobility can have a significant impact on decreasing emissions, even before mentioning additional benefits. Further, following the just transition framework of ensuring no people are left behind in the shift from a high-carbon to a low-carbon economy [10] provides opportunity for urban mobility development to overcome social issues that have been created and exacerbated by current systems. Using European funding and guidelines, successful and just urban mobility developments aim to be well-directed to

[1] Including the Sustainable and Smart Mobility Strategy, the Fit for 55 Package, the Zero Pollution Action Plan, Europe's Beating Cancer Plan, and the Social Climate Fund; to be expanded upon in later chapters.
[2] As it fulfills a basic need for integrating citizens into society and the labor market and represents a significant portion of household expenditure.

address socioeconomic stressors and existing inequalities at the local level. Research and implementation has proven that progressive action at the local level is the most impactful and just path to meet transport decarbonization targets [11], [12].

Benefits of human-centric urban mobility are widespread and applicable at each level of political evaluation. Shifting modal shares to energy efficient PT and AM options means a shift away from harmful air pollutants, including sulfur dioxide, nitrogen oxides, and particulate matter, and carbon dioxide emissions. Air pollutants and greenhouse gas emissions are especially high in areas with high traffic volume and low air flow, inducing an adverse impact on citizen health. Accompanying sickness affects citizens in the short and long term, including affecting their ability to work and shortening life expectancy. Furthermore, money is saved on energy and transport costs, with all of the aforementioned factors contributing to an increased gross domestic product of the city [13]. At a global scale, citizen-centered policy shifts contribute to meeting goals of the Paris Agreement, particularly limiting average global temperature increase since industrialization to below 2 degrees centigrade. The first global stocktake on progress towards these targets [14], published in October of 2023, was dire. It suggested that, while there has been universal uptake of working towards landmark targets set to combat climate change, the world is off track and needs to do much more to meet maximum warming targets. Unfortunate results beside, the stocktake is not a reason to give up on continuing action; on the contrary, stocktake emphasizes continuing benefits of wider uptake and urgency of reducing climate impacts as much as we can. Particularly, it highlights positive disruption caused by increased inclusion and equity, such as by rethinking mobility and shifting our modal habits [14].

In addition to physical health, economic, and climactic benefits of human-centered urban mobility, there are significant mental health and quality of life benefits connected to reclaiming urban space from cars. Redistributing land currently assigned to motorized vehicles has the opportunity to reduce air pollution, as mentioned above, as well as noise pollution and congestion. This is a particular point to emphasize why electrifying personal vehicles is not the only answer to decarbonizing urban mobility. Even beyond secondary and tertiary emissions connected to electric vehicles, congestion caused by gas vehicles and congestion caused by electric vehicles impacts a similar effect on city experience. On the other hand, if smart urban planning redistributes space formerly taken up by personal vehicles to extend sustainable urban mobility paths, urban greenery, and community activities, quality of life can be vastly improved

[13]. Beyond assumption, research has repeatedly proven that reducing car usage improves physical health and well-being [15], AM improves mental capacity and health [16], and green urban areas provide a perceived social benefit and empirical physical and mental benefit [17]. Despite these research outcomes, the fact remains that urban planning over the last 100 years has been heavily impacted by car dependency, in different periods and extents in differing regional contexts.

Relevance

Academically, this study is not the first to contribute a citizen-centered approach to urban transportation. Such research has been conducted since the 1970s, building frameworks as to how to effectively include citizens in the process by critiquing poor processes [18] or by displaying good practice [19]. However, policy analysis is a field which has traditionally failed to connect policy with the citizen, exemplifying the gap created by officials and experts who do not have financial means, resources, patience, and/or empathy to incorporate citizens at any step in the policymaking process [20]. This research addresses the gap by evaluating evolution of policy in a combined bottom-up and top-down approach, recognizing the importance of both in the current state of play. Furthermore, it collects an in-depth analysis of urban mobility contexts for each city, which the literature has so far not done comprehensively.

Methodologically, selection of a non-Euro-American city comparison is unique in and of itself. Building on work related to comparative urbanism done by Tuvikene [21], the selection of Tallinn and Skopje as case studies for this comparative analysis breaks the exclusion of post-socialist cities from similar research. The cities are not chosen because of their overall post-socialism, but rather chosen because of their relevant modern challenges and comparison points, with the idea of post-socialism brought due to historical governance's significant impact on urban planning and urban mobility. This 'de-territorialization' allows for the two cities to be viewed as ordinary entities with complex and individual histories [21]. Inclusion of an extensive historical analysis for each city is central to completing this evaluation, and enhances evaluation completed through a unique triangulation approach. This approach takes into account citizen interviews and onsite observations in order to enhance policy analyses and test research objectives.

At a societal level, the relevant aspect of this work are the end policy recommendations. The two cities who are the focus of this study have moldable SUMPs, which are continuously evolving policy documents considering ever changing political situations. It also develops a comparison of the influence of Europe, analyzing the impact of different political and cultural encounters with Europe. Validity for end policy recommendations lies in the fact that cities take inspiration and direct recommendations from cities with similar contexts and challenges, particularly under the framework of European cooperation [22]. Additionally, countries interested in ascension to the EU often benefit from assistance of current-EU member countries. Transportation policy can be one such avenue of assistance, as an imperative part of the EU accession process is meeting the *acquis communautaire*[3], legislation defining standards for joining the EU which includes transport policy within its chapters.

Context[4]

Governments are typically responsible for coordinating and upholding urban mobility systems. As such, public policy is the largest factor in development of individual mobility systems through taxes, subsidies, land use allocations, and urban development choices [23]. Under Eastern European socialist systems, equitable access to mobility was emphasized for all citizens, reflecting a commitment to social equity and collective welfare. In line with Marxist ideals opposing private ownership of goods, urban mobility systems resonated with broader principles of communal ownership and shared resources, providing a useful effect as a good [24]. Policies disincentivized automobile ownership with high prices and low supply, while PT was offered at a low cost with high supply. Politicians claimed these systems ran at outstanding levels, although evidence suggests that they were flawed in efficiency and comfort [25].

Many Central and Eastern European (CEE) countries experienced population booms and widespread urbanization during socialist eras in the mid- to late-1900s. As their government systems focused on equal mobility systems centered around PT and pedestrians, the urban footprint of the cities today still represents environmentally friendly, human-centric planning [26]. Despite this fact, cars have still widely entered the cities because of social and cultural effects of post-socialism, particularly views on private ownership. Resulting traffic, among other factors, mean that these cities now unfortunately experience some of the highest rates of air

[3] Hereunto: *acquis*
[4] With an extended introduction to the cities presented in Annex A

pollution in Europe [27]. Pollution disproportionately affects the poorest communities [28], and a shift towards car centrism has a dangerous effect on the potential of transport poverty in these cities. To overcome these challenges, post-socialist cities are potentially well positioned to decarbonize their urban mobility systems and overcome modern challenges because of their planning bases [25], but additionally face social, political, and financial barriers that restrict positive urban mobility developments.

In the context of the citizen's role in urban mobility development, Tallinn, Republic of Estonia[5] and Skopje, Republic of North Macedonia[6] (Figure 1) are interesting and comparable for a plethora of reasons. After undergoing long periods of foreign rule prior to the 20th century, each city experienced an impactful period of socialism from 1945-1991. Application of socialism

Figure 1: Map situating the case studies on a map of Europe; Tallinn in blue and Skopje in red

was slightly different in each context, despite respective leaders developing their ideologies following WW1 under a shared opposition to classical liberalism. The Socialist Federal Republic of Yugoslavia (SFR Yugoslavia) of Josip Broz Tito deployed a work-controlled economy, known as market socialism, which provided more autonomy and influence for Yugoslav citizens [29]. The Union of Soviet Socialist Republics (USSR) was more centralized and bureaucratic,

[5] Hereunto, Estonia
[6] Hereunto, N.Macedonia when referred to post-2018

prioritizing the Russian population of the country and using satellite states such as Estonia as buffers against the capitalist world [30]. Despite the disparities, fundamental commonalities remained that guided creation and implementation of policy and urban planning. As Tallinn and Skopje experienced extended periods of population growth and urbanization following WW2, the cities were developed orientated towards PT and pedestrians rather than cars, particularly due to opposition of private ownership. Infrastructure development was rooted in citizens' productivity, with the governments aiming to connect citizens with their places of work and essential services which maintained productivity. That was until the 'Revolutions of 1989', which resulted in both Estonia and the Republic of Macedonia undertaking a rapid reform of economic and policies upon their respective independences in 1991, a big-bang approach which has been shown to be the more effective way to mitigate inequality and poverty and motivate strong institutions [31].

Power transfer from socialism to capitalism affected PT infrastructure differently, but the capitalism-induced increase in private car ownership coincided with negative cultural views and usage rates of PT [32]. Novel ideas of ownership, modernity, and freedom of movement meant a widespread uptake of car usage which has, in turn, guided policy and funding towards car-related mobility [33]. As a part of this shift to capitalism, each country has been growing closer to the EU in the post-socialist era. However, it is evident that today the role of the EU is fundamentally different in Estonia and N.Macedonia, as the former is a Member State and the latter is in the Accession stage. There are historical implications behind this difference, and the role of Europe is increasingly present in each country. Today, they face similar challenges of growing car dependence, urban sprawl with poor interconnections, and cultural acceptance of increased cycling culture. A statistical comparison of the cities, confirming their similarities, follows in Table 1:

Table 1: Comparison Table of Vital Mobility Related Statistics in Tallinn and Skopje

	Tallinn	***Skope***
Population	445,002 (2022)	526,501 (2021)*
# of Voters	291,633 (2023)	441,637 (2024)
Area (sq. km)	159.54 km2	337.8 km2
National Car Ownership (Per 1000 People)	621 (2021)	260 (2021)
Registered Passenger Vehicles	216,192 (2022)	155,195 (2021)
Public Transport Options	Bus, Tram, Trolleybus, Train	Bus, Train
Bike lanes (km)	107.5 (2022)	75 (2020)
Roads (km)	1,053 (2022)	1,400 (2016)
Bike Lane - Road Ratio	1:10.2	1:53.6
EV ownership (country)	3,300	476 + 3,136 hybrid
Major connections (highest trafficked transport corridors via plane, ferry, train, bus, and/or road)	Helsinki, Riga, Frankfurt, Stockholm	Niš, Thessaloniki, Istanbul, Vienna

Research Question

In order to assess human-centric decarbonization of urban mobility in these cities the guiding research question of this study is: *How are citizens' needs considered in the policy processes of decarbonizing urban mobility in Tallinn and Skopje?*. Over the course of answering this question, this study additionally seeks to answer two additional questions: *How does history influence the current state of urban mobility policy and citizen-centering, culturally and politically?* and *Does differing levels of European integration affect urban mobility policy and citizen centering?*.

To sufficiently evaluate the guiding research objectives, a triangular methodology is applied to a strategic and uniform evaluation of each city. Evaluation of historical and European contexts preempts presentation of the context as it is, with qualitative and quantitative data drawn for each section from discourse analysis, interviews, and observations. Contextual frameworks explaining the choice of contexts and methods are Multilevel Governance (MLG), Europeanization, and the Availability, Accessibility, Acceptability, and Quality (AAAQ) frameworks. A novel approach, this allows for a top-down historical policy evaluation through

Europeanization and a bottom-up citizen's needs evaluation through AAAQ, finding their overlap within the overarching system of MLG.

Chapter Outline

To effectively conduct this Baltic and Balkan comparative analysis, the study is formatted as follows: Chapter 1 introduces the guiding conceptual framework and presents methodology of data gathering. Chapter 2 conducts an in depth analysis of Tallinn by introducing historical context before analyzing current policy and situation, and Chapter 3 does so of Skopje. The discussion in Chapter 4 compares, contrasts, and provides policy recommendations for the cities, before the study's Conclusion.

Chapter 1: Framework and Methodology

1.1 Conceptual Framework

In this study, the research scale is the local level and cities are the research entity. Cities play significant roles in the success of meeting vital global decarbonisation goals, following national pledges and aligning themselves with actors across multiple levels both national and supranational [34]. In order to better understand the overlapping and interconnected spheres of authority resulting from actor interaction in a city's complex decision making processes, this thesis applies the MLG framework of analysis [35]. The framework emerged from a 1992 study of structural policy reforms in the European Community which doubted a continuation of unified polity from supra- to sub-national levels as CEE states integrated into the Community [36]. With MLG as the framework by which we can scrutinize motivations of a municipality, particularly those situated on the European continent and influenced by the supra-national government that is the EU, we can better grasp environmental policy related actions of both governmental and non-governmental authorities at the local level.

An essential complexity of MLG is the emphasis of governance rather than government, introducing the horizontal power spread between governmental and non-governmental actors to already complex vertical levels of government [37]. In further work done to develop MLG in the context of European integration, two types of MLG were defined by framework creators. 'Type I' identifies a more top-down, tiered approach of evaluation, while 'Type II' offers a more balanced, spherical approach which better describes the European model of climate change policy [35]. Moreover, 'Type II' evaluation describes the citizen's role in urban mobility governance as sharing "some geographical or functional space and [having] a common need for collective decision making" [38]. Employing the Type II approach will allow for a view of multidirectional relationship between the citizen and the actor at each level of evaluation, rather than viewing the relationship as a top-down funneling of European policy to the local level.

That being said, at the epicenter of the MLG framework lies the discovery of European integration. The role of the EU has become significant in both Tallinn and Skopje since the framework's introduction, with the EU's cohesion policy accounting for ⅓ of their budget and targeting "raising of the standard of living and quality of life, and economic and social cohesion among Member States" [39]. It forms European modernization, the theory that asserts an

increase in liberal democratic status of political institutions as states become more economically modernized, wealthier, and more educated [40]. Additionally, it implies adoption of western values in both culture and politics, and indeed includes the urban mobility sector as part of cohesive policy expenditure. There is much scholarly debate about efficacy of modernization theory [41], but it holds that re-emergence of this theory in 1991 has led to adoption of European values and culture, or Europeanization, in both EU Member States, such as Estonia, and EU Candidate States, such as N.Macedonia.

As with the MLG framework, it is counterproductive to view Europeanization as a one-directional transposition of policy from Brussels to the rest of Europe. Rather, it is a theory which guides consideration of 'encounters with Europe', acknowledging various feedback loops within levels of government and between these levels with Europe [42]. Conceptualization of 'Europe' does not ask whether it matters in politics or policies, but instead how it matters and to what effect [43]. In doing so, Europeanization provides a significant advantage compared to the broader Modernization theory in the context of this paper; it allows a more significant comparison between the effect of the EU in Member States and Candidate States and allows for space for non-Eurocentric views. Related to this research, it allows for an evaluation of the effect of citizens and of history within the MLG and, as such, creates a more well-rounded picture of current policy.

So far, theories guiding the conceptual framework of this paper explain actors from the organizational level of city government upwards, but do not yet include needs of citizens, which should direct urban mobility policymaking at every level in the MLG structure. In this context, the Availability, Accessibility, Acceptability, and Quality Framework (Table 2) is effective to identify policy gaps and define the needs of citizens in Tallinn and Skopje. First developed for application to the health sector, it is widely applicable to assessing other types of services [44], especially those that fall under socio-economic human rights [45][7]. Indeed, this is confirmed by the European Parliament (EP)'s 2022 white paper on transport poverty, which directly highlights inadequacy of the AAAQ indicators as elements leading to transport poverty [46]. Definition of transport poverty, which had before been undefined in policy literature, was derived from the topic's seminal paper from 2016 which expands on these indicators [47].

[7] As urban mobility does; discussed in the intro.

Table 2: Summarization of the transposition of the AAAQ framework into the urban mobility sector

Category	Definition	Applied to Urban Mobility
Availability	Existence of services	A plethora of transport options with high frequency and interconnection
Accessibility	Physical, Financial, Bureaucratic, Informational	Disabled access, proximity, affordability, simplicity of access to tickets and information
Acceptability	Ethically and culturally appropriate	Reducing climatic impact and social barriers including those related to language, gender, or SES
Quality	Safe and Modern	Quick and safe transport options

At a more official capacity, a definition of transport poverty incorporating some of the AAAQ framework was provided in 2023 by the Social Climate Fund, the funding mechanism created by the EU to alleviate pressure of transport and energy poverty for vulnerable groups in Member States in the context of the green transition is as follows [48]:

> 'Means individuals' and households' inability or difficulty to meet the costs of private or public transport, or their lack of or limited access to transport needed for their access to essential socioeconomic services and activities, taking into account the national and spatial context.'

This first official definition does not explicitly cover all aspects leading to transport poverty for individuals, but does ensure importance of continued development of this topic and a starting point for combating the issue in context of the just energy transition.

Figure 2 displays the connections of the discussed conceptual topics. It emphasizes the overlying approach of MLG connecting top-down Europeanization and bottom-up AAAQ in municipal policy making. In doing so, the conceptual framework does not place one theory above another, but rather enables a neutral view of the policy making processes of urban mobility in the chosen case studies.

Figure 2: Visualizing the conceptual framework

1.2 Methodology of Data Gathering[8]

In order to successfully apply the conceptual framework and identify how citizen's needs are emphasized in decarbonizing urban mobility, this thesis utilizes a discourse analysis approach. Utilization of this methodology is rooted in involvement of discourse in urban policy processes, particularly in defining how language determines power and meaning in the processes [49]. Furthermore, applicability of this approach for the historical portion of this paper is effective, thanks to improving data availability and expansion of the historical discourse field. This historical view allows a study of changes in power and meaning determination [50], perfect for connecting diachronic changes in urban mobility policy between different political regimes. In order to get a holistic view from this form of discourse analysis and avoid subjectivity, a triangulation of sources is utilized before social theories are applied [51]. More specifically, data is drawn from text, from interviews, and from observations.

Interviews were conducted with citizens, organization representatives, academics, and political officials who were identified either through mutual connection or through searches of certain keywords for each city. An email template (Annex B) was used to reach out to 25 potential interviewees, with a 44% response rate. Interviews generally lasted between 45-60 minutes, followed consistent interview guidelines (Annex C), and were transcribed by OtterAI. Interviewees will remain anonymous, loosely identified in Table 3 to show diversity of views while maintaining confidentiality, and coded in order to valorize views and quotations within the

[8] With a note on the researcher's positionality in Annex D

analysis sections. Transcripts and summaries of interviews are not presented in the Annex for data protection and confidentiality purposes. Observations were conducted through city visits

Table 3: The Interviewees, coded by city

Code (City-Number)	Role	Related Org
S-1	NGO Professional	Velo Schools
S-2	NGO Professional	Go Green
S-3	NGO Professional	Smart Up
S-4	Museum Professional	Museum of the City of Skopje
S-5	Activist	Kolektiv Z
S-6	Student	N/A
S-7	Filmmaker	N/A
T-1	Civil Servant	Tallinn Transport Department
T-2	Professor of Urban Studies	University of Tallinn
T-3	Communications Professional	Tallink
T-4	Activist	Estonia Car Owners Association
T-5	Communications Professional	Stockholm Environment Institute
T-6	Student	Instagram: Tallinn_Trams
T-7	Hostel Owner	N/A
T-8	Barista	N/A

near the end of the research period, utilizing mobility systems to provide anecdotal evidence and taking photographs to visualize the research at hand. The visit to Tallinn took place May 17-20, and to Skopje May 22-25, 2024. To minimize disparities and gain a well-rounded view of the city as a citizen may experience it, specific observational targets were identified. Non-exhaustively, this included utilization of each form of available mobility, visits to each city's three most densely populated suburbs, an outing to a popular nature area via PT, and stops at significant transportation nodes. Though these methodological evaluations were primarily qualitative, identifying unquantifiable themes and patterns, quantitative data was used when possible to support qualitative observations[9] [52].

To apply both qualitative and quantitative data with the objective of comparing and contrasting the two case studies, a complex indication table is utilized. Rooted within a more detailed analysis of urban mobility through the AAAQ framework, the indicator table was built by analyzing the World Business Council for Sustainable Development (WBCSD)'s Sustainable Urban Mobility Indicators (SUMIs) [53]. These 19 indicators (distributed in Figure 3) provide a well-rounded overview of indicators for the city, but do so for the top-down point of view. A citizen would emphasize the categories differently, which is why indicators are redistributed through the AAAQ framework. This reduction of their technicality to benefit human-centering is perfectly exemplified by the EU's SUMI technical support guide [54], which pinpoints five

[9] With modal share statistics, for example.

indicators that they deem 'non-core'.[10] Conversely, these indicators are highlighted as impactful on 'Quality of Life' and 'Economic Success' according to WBCSD. The overlapping nature of the indicators is explored throughout the analysis.

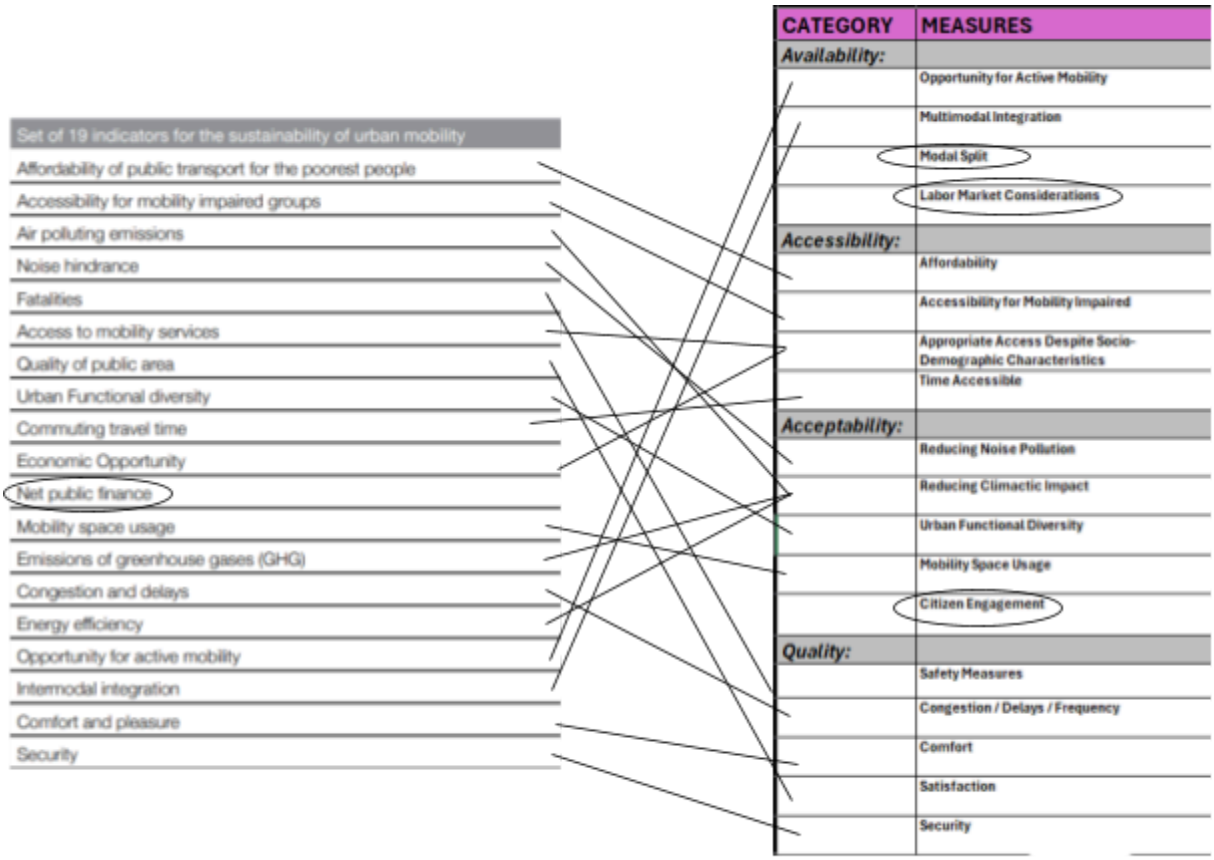

Figure 3: Redistribution of WBCSD indicators in the AAAQ framework, highlighting differences.

The AAAQ indicator table is populated via a discourse analysis on European, national, and municipal urban mobility policies and implementation rating supported by interviews and observations. Ratings are on a scale of 1-3, with red (1) representing a lack of inclusion or achievement, yellow (2) representing under-inclusion or under-achievement, and green (3) representing satisfaction with the indicator. A blank table along with an explanation of indicators is presented in Annex E. With the indicator table being a basic presentation of policy and implementation ratings, explanation is given for ratings in Chapter 2.3 for Tallinn and 3.3 for Skopje.

[10] Quality of Public Spaces, Urban Functional Diversity, Commuting Travel TIme, Mobility Space Usage, and Security

Chapter 2: Tallinn

2.1 Tallinn Before 1991

Situated on the shores of the Baltic Sea in an ideal port location, Tallinn has been occupied by the Danish, Germans, Swedish, and Russians over the course of its history with only minimal periods of independence. As with other European cities, Tallinn experienced significant population growth in the late 19th century thanks to development of industry in the city, then part of the Russian Empire. With growth, trains were introduced, with Baltic Station (Figure 4) constructed near the port and connecting it to St. Petersburg and Paldiski [55]. A sense of Estonian ethnicity began to grow in spite of their occupation, and the country was inspired by the

Figure 4: Baltic Station in 1900 (left) and 2024 (right)

Finnish in working for autonomy from Russia. In a strategic move, the City of Tallinn selected Finnish architect Eliel Saarinen to develop an urban masterplan for the city after a design competition from November 1911 to April 1913. His plan was pivotal to urban planning and development over the following 78 years, in plain sight during Tallinn's independence from 1918-1940 and in secret during Soviet occupation from 1945-1991 [56].

Saarinen's urban plan included a network of electric trams and trains through the city and wide road corridors for accommodation of future transportation options. At the time of planning, the public transportation system that existed in Tallinn was made up of around 37 horse drawn tramcars along main roads, having made their first appearance in the city in 1888 [57]. The system was disrupted due to requisition of horses in WW1 and the Estonian War of Independence, causing the tram network to not run between 1918 and 1921. When it returned, it was composed of petrol vehicles reconstructed from former horse-drawn trams. Electric trams

arrived soon after, in 1925, representing an era of progress in Tallinn. Additionally, suburban rail following the original Tallinn-St. Petersburg line was expanded and electrified the year before. Implementation of trams and trains was meticulous but flexible according to the urban plan, with Saarinen recognizing that the city would grow significantly and identifying zones where growth could occur. He fostered specific area growth through zoning, impressively estimating the population of the city in 2000 and enabling a transport system built for citizens that would live there [58].

When Estonia established its first constitution in 1920, it was very citizen centric on paper. Inspired by the Swiss model of governance, it provided citizens with a high level of initiative to create laws through referenda and decentralized government by providing the parliament with more power than executive and judiciary branches. In practice, the overly democratic system led to government instability, and the Great Depression's effect on the urban population initiated a constitutional crisis [59]. By 1934, a progressively authoritarian rule led by Konstantin Päts ushered in an 'Era of Silence' in Estonia, during which Päts prevented rise of a fascist movement which had won political majorities in Tallinn, Tartu, and Narva before taking his own 'conservative peasant authoritarianism' path [60]. Censorship and lack of elections completely reversed the role of citizens, so much so that Estonian leaders lacked confidence in their support and decided to capitulate to Soviet rule rather than follow the combative will of the people as WW2 commenced. Estonia was annexed by the USSR in June, 1940, in line with the Molotov-Ribbentrop Pact which divided CEE countries between Nazi Germany and the USSR [59]. Estonian Railways became part of the Russian railway system again, just as it had been before the fall of the Russian Empire [61]. However, Soviet occupation was brief before Estonia was absorbed into the theater of conflict.

The breakout of the Soviet-German War in 1941 diminished Estonia's, and indeed Tallinn's, development [62]. Germany occupied Tallinn through most of WW2, inflicting the Holocaust and forcing enlistment of Estonians into the German Army. During the war, half of Tallinn was destroyed, and Estonia lost 25% of its population through death, deportation, and emigration [63]. As the Nazis weakened and retreated from the Baltics, Estonia was independent for just three days before the USSR crushed all aspirations for independence and re-occupied the country in September 1944. From this point until Stalin's death in 1953, emphasis of the Soviet state in Tallinn was repression of the Estonian people and Sovietization of the city. Entire

suburbs of concrete-block apartments were constructed to house immigrants [56] and stations destroyed in the war were built in neo-classicist style which Stalinist architecture followed [61]. Russian immigrants arrived by rail at Baltic Station and were given their keys to new housing upon arrival, while ethnic Estonians found it harder and harder to find lodging. As would be the trend until 1991, urban infrastructure was developed to facilitate citizens' service to the state [64].

After 1953, there was a change to the political order and reduced repression thanks to the new Soviet leader, Nikita Khruschev. Estonia and other Baltic states were granted special status as 'model republics', becoming a testing ground for economic policy. However, in Tallinn, there were minimal differences from other Soviet states as transport infrastructure was nationalized and housing development followed the usual mega-block standard [56]. As the population grew, urban planning honed more into socialist principles of egalitarianism, ensuring that every citizen lived within a maximum walking distance to bus stops, schools, shops, and parks. Apparent

Figure 5: Mustamäe Trolleybus near Estonia Bus Stop, 1974 (left) and 2024 (right)

examples are the large suburban housing estates of Mustamäe, Lasnamäe, and Väike-Õismäe, which began construction in 1957, 1970, and 1973 respectively.

Pedestrian systems were significant in each of these estates, connecting citizens to the expanding PT network [65]. Citizens in Mustamäe were connected to trolleybuses (Figure 5), which had been planned in Tallinn in 1946 and were finally realized in 1965, as well as buses and a planned tram line. Lasnamäe was left with surprisingly inadequate commuting options, as a sunken highway (Figure 6) and accompanying pedestrian boulevards were constructed but a planned high-speed light rail was never added [66]. Väike-Õismäe represents a grander failure of Soviet urban planning; only 25% of planned services were built, including communal parking lot plans that were never realized [65]. Lessons of these suburban estates is that Soviet urban

Figure 6: View of Lasnamäe II micro district from a bus stop on the sunken highway, circa 1975 (left) and 2024 (right)

planning was ineffective as Tallinn's population grew because of lack of completed services in these areas and over-reliance on public transportation to substitute proximity [67].

By the 1980s, Tallinn's population was around 475,000, with the train system carrying around 36.5 million passengers yearly and the tram system carrying 109 million [57]. Tallinn was connected to other Estonian cities, Riga, and Moscow via comfortable express trains, while slower wooden-benched trains connected rural Estonians to the city. PT systems were one of the largest employers, and workers received above-average benefits [68]. Despite these positives, the Soviet-style centralized planning system lacked space for citizen engagement, and impressive pedestrian and PT systems failed to meet challenges of urban sprawl [65]. Soviet grip on Estonia was becoming economically, politically, and culturally looser. Protests began appearing in Tallinn and across Estonia in 1987, with nightly singing marches through Tallinn's Old Town (Figure 7) being the center of Estonian non-violent break from the USSR. The Republic of Estonia was restored in 1991 [59], with Tallinn as its capital.

Figure 7: Tallinn's Town Square, the center of many Singing Protests, 1969 (left) and 2024 (right)

2.2 Post-Independence Context

The period following 1991 in Tallinn was defined by private ownership and privatization. As was common in post-socialist contexts, there was an increase in car ownership and usage thanks to cultural shifts. Additionally, privatization led to suburbanization, as agricultural land that had been protected under government ownership in Soviet times was returned to its former owners and subsequently sold on to private companies. These companies took advantage of a lack of density requirements to build suburban homes, leading to an urban sprawl which the PT system was not prepared to handle [69]. With a lack of acceptable alternatives for people living in these new suburban areas, car ownership was driven up further, and modal shares of walking and PT decreased as car culture became further ingrained in society. In fact, between 1990 and 2000, the modal share of PT staggeringly fell from 77% to 31% due to slowing development and overall reduced quality.

Privatization came as a result of the rapid transition to a market economy, a huge mark of Europeanization processes in the country. In the decade following independence, Estonia had quickly become connected to the EU through significant trade flows supported by the most liberal trade policies of all transitioning CEE countries. Having submitted their application to join the EU in 1995, they were receiving hefty foreign investment, primarily from EU countries, as they worked to fulfill the Copenhagen criteria which assessed their economic and political compatibility with the EU. The EU itself was also politically involved primarily through their primary technical and financial cooperation with transitioning countries, the Phare[11] program. Through this program, pre-accession funding flowed into infrastructure and environment projects, as well as agriculture and technical assistance [70]. Policy and funding was directed overall with the mission of achieving the *acquis*. Importantly for context of Europeanization in the urban mobility sector, Chapter 9[12] of the *acquis* specifically focused on Transport Policy (Figure 8) [71].

[11] Originally named ‘Poland and Hungary: Assistance for Restructuring their Economies’ in 1989 before expanding to other CEE beneficiaries.
[12] Now Chapter 14 after the expansion from 31 to 35 chapters in 2013

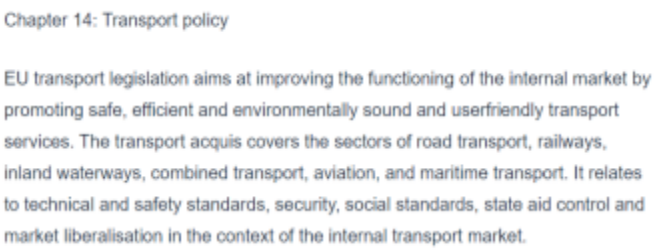

Figure 8: Transport Chapter of the *acquis communautaire*, Chapter 9 from 1993-2013, Chapter 14 from 2013-Present

The European Commission's (EC) 1997 Opinion on Estonia's Application for Membership [72] paints a picture of the state of mobility within the country considering its importance in the *acquis* and co-importance across other sectors. It described the post-independence expansion of services including transport, particularly advanced thanks to the increase of one-day visits to Tallinn by Finnish tourists. PT ticket costs were controlled at a municipal level, while transport, energy, and telecommunications enterprises remained the only non-privatized sectors. Outlook of the implementation of a single market predicted a successful modernization of the transport sector, particularly thanks to multilateral lending from the European level [72]. In a specific evaluation of the transport sector, the EC targeted the same three areas highlighted by the 1995-2000 Community Transport Policy Action Programme: quality, market integration, and interconnectivity [73]. The EC's opinion provides an additional explanation for the newfound domination of private cars in the transport sector being relatively low petrol prices, with the implication of congestion within cities and new border crossings. Overall, the EC looked favorably upon the state of transport in Estonia, with future planning encouraging railway privatization plans and improving road infrastructure and safety.

As the railway system struggled with shifts to capitalism and rising car ownership, the government guided restructuring and privatization in the late 1990s. The state-run monopoly was split in 3, with Electric Railways given control of commuter rail in the Tallinn area, run on rails owned by Estonian Railways, the freight division. The other corporation, Southwest Railways, controlled passenger rail in the rest of the country and was first to be completely sold off in 2000. New ownership reduced or ended passenger services and laid off workers, with government-provided bus transportation providing a more expensive, slower, and less comfortable service while workers didn't receive promised retraining. Estonian Railways was ⅔ sold off soon later, with new ownership improving profits but failing to maintain infrastructure

and diminishing the railway passenger sector, closing stations and prioritizing freight trains. By 2006, the new left-wing government cited deteriorating rail infrastructure and labor troubles in its decision to buy back the railway. In order to renationalize, the Estonian government had to pay more than double what it had sold the railway (Figure 9) for just 5 years earlier [68]. Privatization in the transportation sector was a clear failure of Europeanization at a national level, but did aid in Estonia's 2004 admission to the EU.

Figure 9: Estonian Rail Map circa 2016 with the electrified portions of the railway highlighted in red

Upon joining the EU, Estonia as a whole gained access to larger funds, receiving €9.1 billion from European Structural and Investment funds between 2004 and 2020 [74]. In the transport sector, European funds especially went towards cycling and rail developments within Tallinn and rail connections to neighboring cities. The city of Tallinn also began joining various EU funded projects concerning urban mobility, beginning with CIVITAS[13] SMILE in 2005. As a follower city, the largest achievements of the project were implementation of a priority network for 1/7 of the PT system lines and introduction of a stop-call system on almost all PT vehicles. These measures helped slightly change citizen's vision of PT and somewhat reduced declining use of PT because of increased quality and accessibility [75], but also showed much more needed to be done to reach a respectable level of AAAQ and subsequently reduce car usage in the city.

In 2008, Tallinn joined CIVITAS MIMOSA, a project which radically shifted their urban mobility policy direction. With similar fundamentals of shifting modal shares and reducing emissions, the MIMOSA project was driven by citizen engagement both in development phase and in implementation phases. For example, the 'Knitting Graffiti' project (Figure 10) was

[13] Acronym of CIty-VITAlity-Sustainability

implemented, encouraging citizens to knit art in public spaces and some buses, softening the

Figure 10: Photo of the 'Knitting Graffiti' project in Tallinn

image of PT as it was knit-wrapped in national patterns. This project was connected to a 10% increase in bus satisfaction and a 7% increase in car owners using the bus [76]. Another implemented project was 'Good Design Enables, Bad Design Disables', where inaccessibility of information was tackled by involving different user groups within initial stages of developing the new mapping system. A more-user friendly map, ticketing system, timetable, and pictogram system came from this project, with citizens also involved in a formal feedback system through universities and Erasmus. In one final example, MIMOSA changed the face of cycling in Tallinn, guiding them to winning the 2012 European Cycling Challenge despite a historically low share of biking in the modal share and an almost non-existent bike path system. Engagement in the challenge rose through Facebook, and led to hefty investment in biking infrastructure following the shift in citizen habits. The project also inspired a conjunction between technology and infrastructure with citizen-led aspects, such as simplifying the ticketing process via an electronic system (Figure 11) and introducing eco-driving on regular service tram and bus routes [77].

Figure 11: A modern ticket card in an old paper ticketing machine

As development in Tallinn's internal urban mobility continued off momentum created by the aforementioned CIVITAS projects, European emphasis shifted somewhat towards interconnections. This was in line with the trans-European transport network (TEN-T) policy which was established in 2013 and was recently revised to better align with the European Green Deal and the Sustainable and Smart Mobility Strategy. Essentially, the goal is to link major cities and transport nodes by 2030, reducing environmental impact and increasing safety [78]. For Tallinn, three primary projects within this framework included establishing an airport connection with the urban node, building a tunnel between Helsinki and Tallinn, and the Rail Baltica project (Figure 12). Airport connection was achieved via tram in September 2017 [69], and Rail Baltica

Figure 12: Rail Baltica plan, connecting the Baltic states to Germany

is due to be completed by 2030 having begun construction in 2017. The tunnel with Helsinki, despite completion of feasibility studies, is currently at a standstill [79]. A throughline of the TEN-T policy is emphasis on efficient transportation of people, and as such the projects have undertaken public engagement activities, including the Rail Baltica Youth Council which interviewee T-6 shared anecdotal information of.

One of the intermodal connections touted in Tallinn to reduce car usage in the city was Park and Rides (PnRs), which saw an expanded deployment in 2013. PnRs targeted commuters living outside of Tallinn, hoping to reduce congestion and improve air quality in the city. Systems like this were popular in Europe around this time as awareness surrounding air quality improved and community pressure from citizens and environmental NGOs increased, with PnRs seen as a stopgap employed in conjunction with other urban mobility developments [80]. This was indeed the case in Tallinn, as PnRs were immediately connected to the newly free PT. By

parking in one of four PnR lots (Figure 13), non-Tallinn residents were able to enjoy the same benefits as Tallinn residents, with the added benefit of a free parking spot. Free PT was a measure introduced by the mayor thanks to a whopping 75% approval via a public opinion poll

Figure 13: Tallinn's original 4 PnRs; image from https://www.tallinn.ee/en/tallinnovatsioon/park-ride

of Tallinn's residents, with the mayor citing citizen's freedom of movement and improving the environmental situation as primary motivators [81]. Recognizing limited accessibility and poor quality of PT outside city boundaries [69], PnRs were important to connect the non-resident commuting population to this radical system.

At the individual level, further support for employing free PT came from Tallinn's impressive e-Identity (e-ID) program. Residents of the city needed to simply buy a €2 Green Card and connect it to their digital identity in order to enjoy the benefits of free PT [82]. This accessibility allows a smoother and more efficient travel experience for both individuals and for the system as a whole, built on Estonia's impressive digitalization. Estonian tech savviness lies in the government's actions following independence, when the public sector was an early adopter of digitalization in order to offer quality services for citizens in the cheapest way [83]. With the e-ID providing ease of access to PT and other government provided services, digitalization is also used to improve connectivity and quality of services by collecting information from Estonia's digital twin to influence transport infrastructure improvements and multimodal connectivity [84]. To continue with successes in the cross-section of urban mobility and digitalization, they have joined a new CIVITAS project, SPINE, as a lead city. From 2023-2026, the project will emphasize multimodal integration by taking advantage of technological

innovation and advancements [85]. A timeline summarizing the predominant events in the urban mobility sector follows (Figure 14):

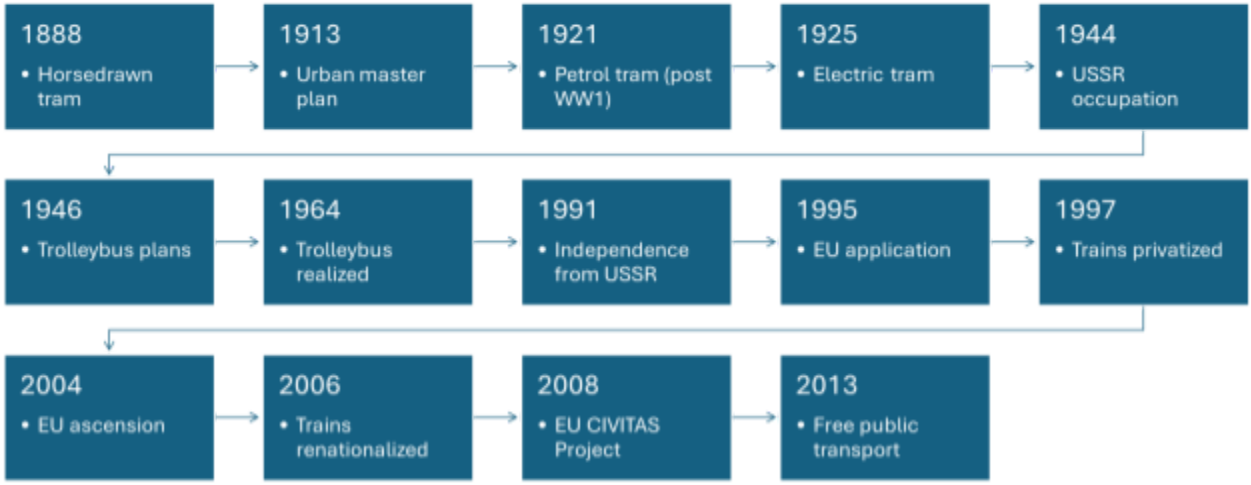

Figure 14: A timeline summarizing significant historical urban mobility events in Tallinn

Having covered the post-independence context with a particular focus on the European context, what is left is to briefly introduce urban mobility related policy affecting Estonia which will be analyzed in the following subsection on citizens and AAAQ. For Tallinn, this means evaluating [86], [87], [88]:

Table 6: The policy texts evaluated for Tallinn

Plan Name	**Introduction Year**	**Short Description**
Sustainable and Smart Mobility Strategy	2020	EU-level strategy for greening, digitalization, and increasing resilience in European mobility systems
Estonia Transport and Mobility Development Plan	2021	Estonia's national transportation master plan for the period 2021-2035
Tallinn's Sustainable Urban Mobility Plan	2023	The mobility strategy for Tallinn, aligning with Tallinn 2035 goals. Translated to English with DeepL.com

2.3 Citizens and AAAQ

Overall, Tallinn has set ambitious targets through their policy that aligns with and excels beyond targets set at the European and national levels. At the municipal level, their recently developed and published SUMP [88] aligns with the vision of Tallinn in 2035, described in their Tallinn 2035 development strategy [89]. As for emphasis on citizens throughout these policies,

alignment with indicators defined within the AAAQ framework shows positive signs for a future of citizen-centered, decarbonized urban mobility in Tallinn if the policies are well implemented. The city has particularly created a positive image of PT and AM systems through unifying the looks of trams and buses, eliminating advertisements on vehicles, and greening the city, according to an interviewee.

Within Tallinn's SUMP, it is stated that implementation "depends on all stakeholders, including every citizen of Tallinn, to achieve their objectives" [88]. However, data collected through observations and interviews indicates that citizen-centering of policy implementation is so far not aligned with the city's ambitious targets. Implementation ratings largely are highlighted as yellow because it is clear the vision is there, and the course can be corrected as the new mayor (elected April, 2024) aligns their plans with the relatively new policy (from November, 2023). With the completed indicator table presented below (Table 5), the remainder of this subchapter will provide explanations for each rating before summarizing primary challenges for the city.[14]

[14] With extended explanation in Annex F

		Key:	One	Two	Three
CATEGORY	MEASURES	European Policy Rating	National Policy Rating	Municipal Policy Rating	Implementation
Availability:					
	Opportunity for Active Mobility				
	Multimodal Integration				
	Modal Split				
	Labor Market Considerations				
Accessibility:					
	Affordability				
	Accessibility for Mobility Impaired				
	Appropriate Access Despite Socioeconomic Status				
	Time Accessible				
Acceptability:					
	Reducing Noise Pollution				
	Reducing Climactic Impact				
	Urban Functional Diversity				
	Mobility Space Usage				
	Citizen Engagement				
Quality:					
	Safety Measures				
	Congestion / Delays / Frequency				
	Comfort				
	Satisfaction				
	Security				

Table 5: Completed AAAQ indicator table for Tallinn

2.3.1 Availability

The European Smart and Sustainable Mobility Strategy [86] brushed wide strokes over the importance of AM in the decarbonization of urban mobility, describing the importance but falling short of proposing how cities can support construction of accessible, acceptable, and quality cycling infrastructure. In April 2024, the EU addressed many of these gaps through the European Declaration on Cycling [90], building on the 2019 Road Infrastructure Safety Management policy to set the course for building safe and comfortable cycle paths for users. At the Estonian and Tallinn municipal levels, AM is well defined and emphasized, with specific implementation targets including placing 95% of the population (baseline 40.8%) within a 500 meters of home from the core network of cycle paths by 2035.

Figure 15: Urban bike lanes on the Pirita Promenade (left), near the city center (middle) and in the Lasnanmäe suburb (right)

However, in implementation, urban bike lanes leave much to be desired. While there are positive examples of well defined and separated bike lanes outside of the city center, such as along the Pirita Beach and to the Lasnamäe suburb, both on the city's eastern side, paths in more urbanized areas of the cities do not meet the same standards (Figure 15). Interviewee T-1 described the difficulty of planning routes through the city, while T-6 emphasized that "red lines aren't infrastructure". Bike lanes start and stop abruptly, with poor signage and dangerous crossings through busy bus stops. The opposition party highlighted the disconnectivity in March this year, saying that paths are being built 'too haphazardly', and would be better built in a 'gradual manner' [91]. Another interviewee, T-5, described the challenge of disconnected cycle lanes particularly for cycling to new places as pinnacle for motivating a positive modal shift in the city.

Despite challenges prevalent within cycling journeys, Tallinn does excel with their multimodal integration. Tallinn and its private companies are motivated from the European level emphasis on seamless mobility and the future of Mobility as a Service (MaaS), which enables integration of planning, booking, and paying for multimodal travel through one digital platform. Companies such as Bolt, who provide taxis, short-term car rentals, and electric scooters for 'last-mile' trips, Tallink, the largest traditional taxi company in the city as well as ferry service provider, and Bikeep, a digital bike rack company which provides a free service for users in Tallinn, were born in Tallinn and are essential to implementation of multimodality. Good examples of multimodality in the city are especially prevalent at transportation hubs and outside public buildings where Bikeep racks and Bolt charging stations are centered (Figure 16), and on

Figure 16: Charging Bolt Scooters (left) and a full Bikeep rack (right)

regional trains which have significant bike storage areas to support AM habits of commuting workers.

The multimodal system exists with imperfections, of course. As with any other city who has private e-scooter or e-bike services, Bolts are strewn across the city, blocking bike paths and busy pedestrian walkways. Digital enforcement of parking restrictions fails to mitigate bad practice, clearly frustrating multiple citizens observed stopping their bikes to move e-scooters from their path. Tallinn is implementing pilot projects [92] to improve Bolt parking schemes, though it remains to be seen how successful these schemes will be in resolving parking problems [93]. Additionally, while the city has a grasp on regulating traditional taxi companies such as

Tallink, particularly when it comes to emissions standards, interviewee T-3 described how these regulations were not equally imposed on short-term car rental companies, such as Bolt.

With mixed success of overcoming challenges of the last-mile through various multimodal integration plans, the shifting modal split is continuously a hot topic at Estonia's national level. Currently, they are the only EU country without a car tax, which seems very close to changing under the current government. Interviewees across the board shared their satisfaction that the rule was going to change, other than interviewee T-4 who brought a more rural-based perspective. They shared dismay that a car tax was being implemented nationwide despite its rurality, considering how inefficient it would be to connect every citizen with PT. At a municipal level, they supported initiatives to drive out cars, particularly referencing PnRs which Tallinn has tactically built on the outskirts. While these PnRs provide cheap parking and free PT connections for non-citizens, parking is not yet expensive nor inconvenient enough to persuade widespread usage, according to interviewee T-2. Since Tallinn's 2035 Development Plan, progress is already being made in shifting the modal share away from personal vehicles and towards PT and AM; according to the Tallinn 2023 Annual Publication [94], there has already been significant shift since the 2020 baseline:

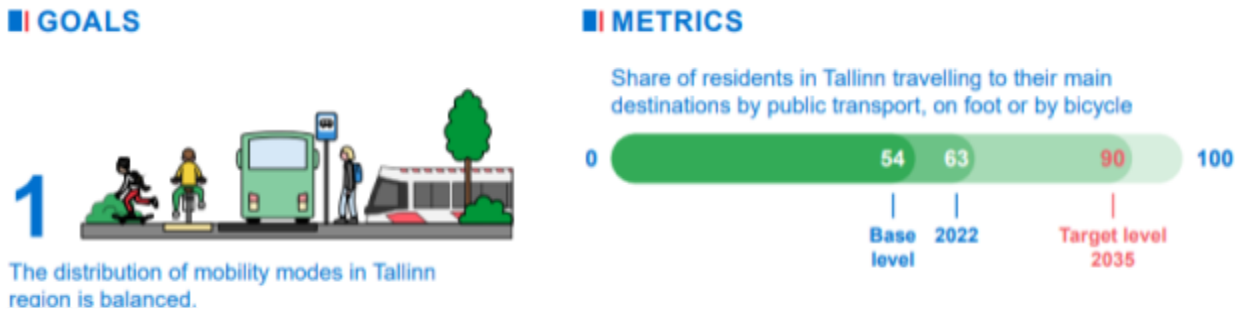

Figure 17: Modal share in Tallinn as of 2023 update

As Tallinn undertakes significant construction projects to enact the vision of Tallinn 2035 in PT and AM, interruptions go beyond PT connections and cycle lanes for passengers. Interviewee T-6, who has close connections with many tram drivers, highlighted how diversion of tramway ends to accommodate for construction of the new port line moves drivers from rest areas. This has decreased job satisfaction for drivers amidst construction, a sentiment shared by many interviewees and citizens across the city who's day-to-day mobility has been interrupted by

construction. In policy, Tallinn highlights worker satisfaction [88], and needs to overcome these construction-related challenges both for satisfaction and for safety.

2.3.2 Accessibility

The topic of affordability was prevalent in every conversation with interviewees considering that PT has been free for more than 11 years in the Estonian capital. Within municipal policy, there are stated goals of regional expansion to the rest of Harju County to allow for accessible and affordable systems for everyone in the region. Interviewees highlighted that, while they support and gain from free PT, there has been a lack of a marked increase in ridership since its implementation. Interviewee T-2 particularly emphasized impact on funding for the system without an explicit benefit for the city as of now, while interviewee T-6 explained how the system is going to have a continuously decreasing budget as advertisements are currently being phased out of the system. Adding a government voice, interviewee T-1 spoke of conversations to remove free PT, but indicated that conversations on the topic had finished as it would be 'political suicide' for a politician to suggest removing it, at this point.

PT remaining free for citizens, guaranteeing accessibility despite economic status, is a significant plus for the city as they work to overcome physical and non-physical barriers, as long as they can overcome funding gaps. As the system stands, there are some barriers to overcome for mobility impaired groups and for older and less advantaged populations who live further from the city center. For example, maintenance of transport avenues has historically been focused on cars, leaving problems especially in winter months for pedestrian walkways. Additionally, some older tram infrastructure is inaccessible for mobility impaired groups, despite the positive image they create to connect citizens to mobility systems (Figure 18). The government is making strides to address these issues; as of this year, the priority for maintenance and snow-clearing has shifted from roads to walkways and cycle paths, a shift which T-5 felt positive about but expressed worry that the government had not proved themselves yet. For transport accessibility, new timetables were very recently created for tram, trolleybus, and bus systems to indicate at what timings accessible vehicles would be passing through. A positive move, the system has to prove that it will align with the schedule.

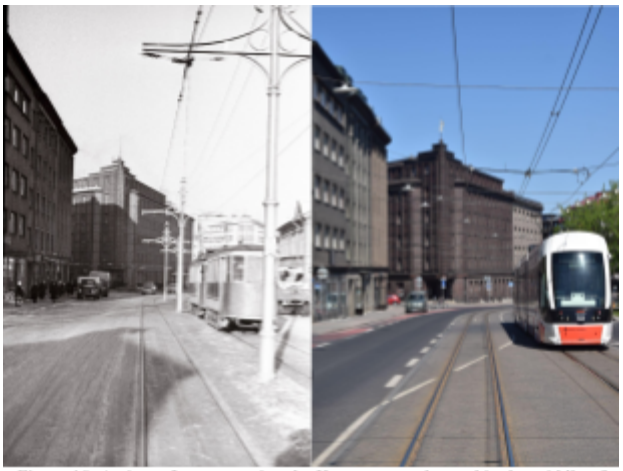

Figure 18: A view of trams passing the Kosmos stop, located in the middle of a busy street, not dated (left) and 2024 (right)

One of the biggest challenges facing Tallinn is appropriate access despite socio-demographic characteristics. Urban spread and aging suburban populations of the city are a clear mark of history, with the oldest and most Russian populations living in heavily populated Soviet era developments, Mustamäe and Lastnamäe, where young Russians had moved in to in the mid- to late-20th century. These areas have inefficient connections to the city and a lack of services, both a mark of poor Soviet-era implementation. Within the different levels of policy, none target suburban groups nor older populations; European and national levels focus on connecting rural populations, while the municipal level provides Key Performance Indicators (KPIs) on accessibility for young people. Different pilot projects, such as self-driving minibusses [95], have been tested to address these gaps, to no lasting avail.

What the policy does address is connecting suburban centers with each other and with the main city center, addressing broader urban spread gaps to better prepare micro-mobility options. The vision of different road types (Figure 19), adopted via the CREATE project from London, and shifts in traffic prioritization are in the process of implementation, which will have an impact on time accessibility for all sustainable forms of mobility. An example of positive implementation already is the recently pedestrianized Vana-Kalamaja, but construction projects across the city to implement these road types impact time accessibility in the short term. Interviewee T-6 described the extreme case of their grandmother, who is significantly mobility limited, having to ride the bus 1 hour to get to her closest grocery store rather than the usual 10 minutes as a result of construction redirections. Once Tallinn implements all construction

projects, interviewee S-2 (who had recently visited Tallinn as part of the URBACT project) shared that Tallinn's PT systems's frequency and punctuality should be a model for other European cities.

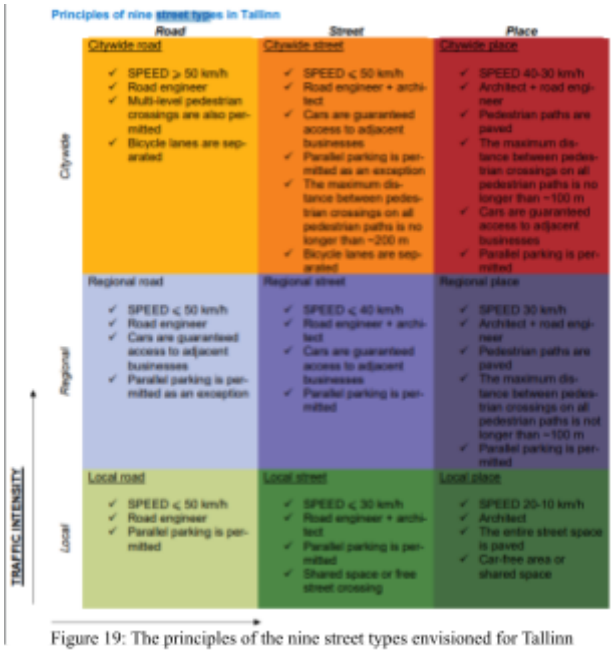

Figure 19: The principles of the nine street types envisioned for Tallinn

2.3.3 Acceptability

Overall, the big picture of reducing climatic impact is the basis of urban mobility transitions. The European level well understands that ambitious emission reduction targets are centered upon the understanding that people are willing to switch to more sustainable transport for their daily mobility as long as conditions of cost, availability, speed, and comfort are met. For Tallinn, the aim to reduce emissions by 70% in 2035 as compared to 2007 emissions, including emission free PT[15] is directed well through policy and implementation has so far been conducted in good environmental faith. Central to reducing emissions is Tallinn's greater vision of 15-minute cities. Policy outlines developing Tallinn and its sub-communities into 15-minute cities with 'diverse possibilities', envisioning shared streets and inviting city centers with sub-20 minute connections between centers. In implementation so far, interviewees T-2 and T-5 indicated that early implementation of these 15-minute cities are in 'hip' areas near the city center, such as Kalamaja (Figure 20), while suburbs experience a lack of services that has existed since Soviet project incompletion.

[15] Without taking into account particulate matter or production and end-of-life recycling

Figure 20: Vana-Kalamaja, a recently pedestrianized street in Kalamaja, Tallinn

As welcoming streets are being developed, certain areas of Tallinn need to undergo significant changes as they are far from the outlined vision. A primary example is the six lane wide road through the city's skyscraper area, which includes minimal biking infrastructure or pedestrian protection as vehicles speed by. Significant building projects are happening in this area, but interviewee T-6 pointed out that construction companies were only required to build curb cuts for cyclists to access the street's skinny bike lanes (Figure 21). They suggested that introducing a city architect position would help align private companies with the city's targets; which was established by the city of Tallinn shortly thereafter.

Figure 21: The aftermath of a skyscraper construction project in downtown Tallinn; the only contribution that the construction company had to add to the bike lane infrastructure circled in red

However, establishment of the position was unlikely due to engagement with citizens. Interviewee T-6 expressed that there was a disconnect between citizens and the government, despite what was written in policy at every level supporting citizen engagement programs. The

sentiment was shared by T-5, who felt so disconnected from decision making processes that they do not feel they are a 'Tallinner'. At a broader scale, the city's newest construction project (Figure 22), a tram line through the port area, displays separation between the city and citizen's needs. People view it as a project done for tourists, interrupting their everyday lives now with minimal long-term benefit for them. Multiple interviewees (T-2, T-5, T-6, T-7) indicated that choosing this project over other tram plans may have a negative effect on PT view and utilization.

Figure 22: Tram line construction in Tallinn, not dated (left) and 2024 (right)

2.3.4 Quality

Safety needs the most improvement in Tallinn's urban mobility system. Though good measures are in place to increase safety for all users, road deaths and accidents are still increasing [96]. Nationally, they are falling behind KPIs[16], caused by a rise in accidents

Figure 23: Popular bike lane overlapping with busy pedestrian area, pushed together due to tram line construction

connected to driving under the influence and speeding in Tallinn and Tartu and an increase of

[16] Target <253 traffic incidents in 2035, Target 0 fatalities, baseline 9 in 2020, Safety index 57 (2020) > 80 (2035)

accidents impacting pedestrians. Interviewee T-6 highlighted a lack of pedestrian safety infrastructure on busy streets in the city, while observations showed a lack of protection or separation of bike lanes across the city. Bike lanes overlapping with bus stops and pedestrian areas (Figure 23) are particularly unsafe. Interviewees shared a feeling of discomfort while riding bikes, particularly with drivers not adjusted to the relatively recent uptake of cyclists yet generally showing respect to pedestrians. Observationally, though, pedestrians are not always correctly prioritized as lights leave them stranded in the middle of busy avenues (Figure 24).

Figure 24: People stranded in the middle of busy intersections due to lack of synchronicity between pedestrian lights

Conversely, PT is spacious, well maintained, and sparsely overcrowded. With an emphasis on maintaining a good image of the system, cleaning and maintenance is prioritized to create a comfortable environment for citizens. Bus stops are generally comfortable, efficiently provide information, and protect people from harsh weather conditions. However, digital boards which had been introduced to the city during CIVITAS projects became less and less prevalent, particularly in suburban areas. Recently, the city began to provide 24-hour PT coverage, listening to the citizens and providing buses on major routes which had generally been unserved from 23:00-5:00. This will undoubtedly support modal shift and satisfaction, both of which fluctuate based on many factors from construction projects to weather conditions. Generally, the city has

Figure 25: The front of a trolleybus displayed in an exhibition at the Tallinn Russian Museum, exemplifying the cultural connection between citizens and PT in the city

done well building satisfaction and connection (Figure 25) with the transport system, and needs to work to maintain and gauge this good will throughout forthcoming development projects.

2.4 Summary of Challenges

Tallinn's biggest challenge is to **fulfill promises** it has made. This includes overcoming co-operational challenges, 'politics of the day', lack of policy consistency, and potential legal/political barriers. Additionally, **funding** is a large challenge, especially considering widespread goals and reduced funding. The city's priority table starts to address both but does not address the challenge of maintaining citizen's positive image of decarbonized urban mobility in Tallinn. Instead, Tallinn should **prioritize development where citizens need it**. Choosing the port as the first expansion point post-SUMP has affected the image and may have effects on achieving ambitious 2035 plans with lower citizen support. **Improving citizen engagement processes** would positively impact prioritization, which would help balance tactics and funding.

Some findings that surely would yield from better citizen engagement would be the need to **improve last-mile micro-mobility services**, which are insofar insufficient for reduced mobility populations, particularly in highly populated suburbs such as Mustamäe. Similarly, promises regarding **prioritizing pedestrian walkway and cycle path maintenance** need to be met, considering the ongoing challenge of weather for year-round uptake of AM. Still, some people will never bike in winter, so sufficient public transport and micro-mobility options need to be supported through **infrastructure to achieve the overarching goal of reducing urban private car usage**. Beyond infrastructure, this includes **better maintenance of the labor market**, including through training initiatives, reskilling, and improving worker conditions, particularly in under construction areas. Finally, comfort and safety in all forms of the urban mobility system need to be ensured through addressing **cultural challenges** of car path dependence and lack of awareness of priority between pedestrians, cyclists, and cars

Chapter 3: Skopje

3.1 Skopje Before 1991

Skopje lies nestled in a large valley of the Vardar River basin. At the heart of the Balkan peninsula, the city was part of the Roman, Byzantine, Bulgarian, Serbian, and Ottoman Empires. Public transportation options arrived in the city in 1873, when the first railway link was constructed, connecting Skopje to the Greek port of Thessaloniki as well as Istanbul [97]. Soon after, Skopje's economic development accelerated due to connection to Western Europe via Belgrade. In 1884, the first horse-drawn PT arrived from Vienna, which lasted until the city's annexation from the Ottoman Empire by the Kingdom of Serbia in 1912 [98]. Interviewee S-4 reaffirmed its existence, with a maintained relic displayed in Figure 26. The inaugural Skopje

Figure 26: A maintained relic of Skopje's original horse-drawn public transport system

master plan was decided through competition in 1914, with the winner developed by Serbian architect Dimitrie Leko. Implementation was limited due to war in the region, but the radial plan emphasized a street web with tram routes integral in the city's continued planning. The plan was timely; Skopje had been developing spontaneously and uncontrollably during Ottoman times, and this allowed smarter planning for a soon to grow population [99]. Additionally, the plan represented an introduction to European city modeling [100].

Bulgaria occupied Skjope during WW1; thereafter it was incorporated into the Kingdom of Serbs, Croats, and Slovenes, colloquially known as Yugoslavia[17]. In 1929, Leko's earlier plan

[17] And, in 1929, officially the Kingdom of Yugoslavia

was formalized around private land by Skopje's mayor. Adaptations included greater emphasis on green space within and surrounding the city, and introduced public objects which remain as cultural heritage today. Streets were linearly extended, connecting functional zones by means of PT [100]. During WW2, the city experienced heavy German bombing and Bulgarian rule, after which it was re-incorporated into Yugoslavia. Socialist after the uprising led by Josip Tito, the expulsion of the monarchs and establishment of a constitution modeled on the USSR's, Skopje became the capital of Macedonia, the southernmost constituent unit of SFR Yugoslavia. A new urban plan was introduced, again changing the face of the city through designs around equality, rapid industrialization, and modernization [101]. Post-war rebuild regulations emphasized zoning, efficient transportation, public spaces, and suburbanization to achieve these goals.

Transportation was significant within socialist planning, both by building road infrastructure within the city and adding intercity connections [99]. Additionally, due to Yugoslavia's position of non-alignment during the Cold War, their transportation system gained from both the East and West. For example, Skopje's bus fleet consisted of hundreds of London buses which had been purchased by the national government [102]. This was the sole PT existing in the city, despite the presence of trams in other Yugoslav cities. The railway system was expanded and electrified, operated by Yugoslav Railways. A ring road was built around the city and connected to the Brotherhood and Unity Highway, the pioneer highway in CEE connecting Macedonia with three other constituent republics [103]. The city continued to grow in terms of area and population, aided by intra- and inter-national connections, until a magnitude six earthquake struck Skopje in 1963 and destroyed about 80% of the city.

Rebuilding of the city was spearheaded by the UN, with Skopje declared an 'international city of solidarity' in the midst of the Cold War. A new urban master plan was developed by Greek Konstantin Doxiadis and Polish Adolf Cibrowski, well known urban planners from the Western and Eastern blocks, along with detailed city center plans designed by Japanese architect Kenzo Tange. Reorganization of the metro area shifted industry to the edges of the city and established new city highways which would reach extensive housing estates tangentially from the city center [101]. The railway system was also completely revamped, with the southern railway stopped and replaced with a car corridor, while the new main railway station was dislocated from the center as the old station became a museum (Figure 27) [99]. The urban

Figure 27: What was platform 1 of Skopje's main train station, now part of the city museum

transport network was extended by 2.8 times during reconstruction, while housing was re-established for much of the population who lost their homes, all accomplished with international financing (~$5 billion USD equivalent) [104]. Despite successes of the 60s, public financing began to dwindle in the 70s, and many key transport corridors connecting the rapidly constructed housing estates to the city were never built. Greater policy failures of the new urban plan included a misguided understanding of the city's social dynamics, having neglected public involvement during development. The result was inequitable housing developments, not built with cultural sensitivity in mind, and a failed attempt to separate the town from the country in social engineering tactics. The city center is particularly contentious to this day, as the Tange's design was visionary but had little regard for the city's history [105].

Central planning in the ensuing 20 years failed to address these shortcomings and exposed Skopje to unexpected and unregulated changes. A self-contribution fund for building public projects such as sports fields, swimming pools, playgrounds, and trams collected 4% of citizens' salaries. However, a lack of accountability meant that these funds seemingly disappeared, with tram projects introduced multiple times under different names and never coming to fruition [106]. One such example, explained by an interviewee, was the 1989 tram referendum where citizens considered allocating funds towards a tram and trolleybus system for the city. A poster for the yes campaign can be seen in Figure 28; citizens voted no.

Figure 28: A campaign poster promoting trams and trolleybuses ahead of a 1989 vote on their implementation

The Yugoslav state had begun to struggle, with the oil shock in Europe sending shockwaves through their export-reliant economy. Ethnic tensions grew after Tito's death in 1980 and wars broke out across Yugoslavia beginning in the 1990s. Amidst it all, the Republic of Macedonia declared independence in September, 1991, becoming the only former republic to gain independence without resistance. The new country emerged with Skopje as its capital and a post-independence urban landscape that was the product of post-earthquake reconstruction, engulfed in the economic, social, and political changes that partnered the transition to capitalism.

3.2 Post-Independence Context

The capitalist transition in Skopje, similarly to Tallinn's, was defined by the inflated role of private capital in the evolution of urban landscapes. Private landowners and developers became key stakeholders, leading a construction boom not fully controlled by public authorities. Urban sprawl was a problem in Skopje as it was in other post-socialist contexts, particularly due to emphasis on building new estates in city outskirts, taking advantage of de facto relaxation of planning regulation. Emphasis of investment on city outskirts affected the center, which had already experienced the lowest and slowest rate of development following the 1963 earthquake [101]. Deregulation and privatization had a significant effect on urban mobility. The effect on PT

was immediate, with private bus owners allowed to operate without any controls and racing to collect passengers. Reduction in quality was accompanied by a marked increase in private car ownership attributed to shifts in availability and cultural views. The ridership per year on PT decreased to 43 million from the pre-independence 150 million passengers, proving a lasting effect on the current modal split and city planning directions [107].

Land use change in Skopje can be heavily attributed to migration after Yugoslav disintegration. Rural-urban migration accelerated in Macedonia in the 1990s, likely due to changing economic conditions and the search for opportunity. Additionally, an influx of refugees escaping the Yugoslav Wars, was flowing in from Slovenia, Croatia, Bosnia, and Kosovo. Urban sprawl expanded further in opposition to high-density plans; the population influx put pressure on the unprepared transport system [107]. Lack of preparation stemmed from the urban master plans, which did not adequately address new challenges facing the city. From independence until 1997, regulation remained loose with national level laws defining future regulation without implementation on the city level. Amongst these laws were the 1995 Law on Local Government, which decentralized power, transferring it to municipalities. It was the first time that capabilities such as budgeting and public service coordination were afforded to the local government. Subsequently, urban planning was to be achieved locally, rather than from centralized government. Decentralization did not simplify the process; 34 municipalities extant pre-1996, ballooned to 120 in 1996, before settling in the 80s in the 2000s. In Skopje alone, ten sub-municipalities have a voice in urban planning and service provision. Nevertheless, the first post-independence urban master plan in Skopje was adopted in 1997, emphasizing projects that filled in the broad streets and public spaces included in the 1964 reconstruction plans [108]. However, realization was slowed by lack of investment; Macedonia consistently attracted some of the lowest foreign direct investment in Europe [101].

In 2007, significant public funding arrived in Skopje as a new right-wing government came to power in Macedonia. This was due to their plan of antiquisation, celebrating the history of the country through illogical and iconic monuments and sculptures (Figure 29), essentially recreating an image of the city that never existed. Skopje's urban plans were changed four times in two years to accommodate these plans, with a rapid approval process that discounted transparency and influence from either the local community or experts. Summarized in a plan

entitled ‘Skopje 2014’, it resulted in the construction of 136 structures between 2010 and 2014 at

Figure 29: Two monuments of the Skopje 2014 project

a cost of $700 million USD. Just 10 years later, many of the structures are dilapidated or are being demolished due to nationalistic undertones [109]. Concurrently, former government officials are being investigated for abuse of office and money laundering in relation to the project [110]. This event is the most drastic and significant proof of the disconnect between citizens and government in Macedonia, particularly regarding decision making and the use of what limited funds the country does have. Transport infrastructure, in particular, has suffered from a lack of investment, visible through inner-city congestion and inadequacy of PT. Some progression occurred despite these challenges, largely due to the European context of which Macedonia was relatively newly a part.

The EU established a pathway for the Western Balkans (WB) countries to join in 1997, adding to the Copenhagen Criteria that regional cooperation must be established before European integration could begin. A summit in Thessaloniki in 2003 showed Macedonia and the other WB countries that their future would be a European one with the meeting of all conditions, and therefore led them to applying for accession in 2004. In 2005, the country received EU candidate status, a title they still hold today. Beyond national context, the primary blockages of their accession have been Greece, due to disagreement about their name, and Bulgaria, over historical disputes. Greece’s objection ended in 2018, when the country officially became the Republic of North Macedonia, and Bulgaria’s change of position relies on an adaptation of the Macedonian constitution to include the Bulgarian minority [111]. As a candidate country, N.Macedonia has accessed influential funding and access to European programs, undergoing a slow

Europeanization amongst contextual barriers of shifting policy. For example, the Energy Community for South East Europe was established in 2006, with the aim of aligning the Balkans with the EU internal market and the evolving energy chapter of the *acquis*, including decarbonisation and energy efficiency measures.

With European influence expanding, N.Macedonia liberalized their train system in 2007, aligning with the EU's favorable view of privatization in the rail sector. The system broke into two parts, one infrastructure-owned and the other train-owned. They remain state-controlled, as private companies were blocked from entering the transport sector until the country achieves European integration [112]. Meanwhile, Skopje shifted towards Europe by joining CIVITAS RENAISSANCE in 2008. This project aimed to aid in the development of innovative and sustainable urban mobility systems, particularly in the development of PT, over a 4 year period.

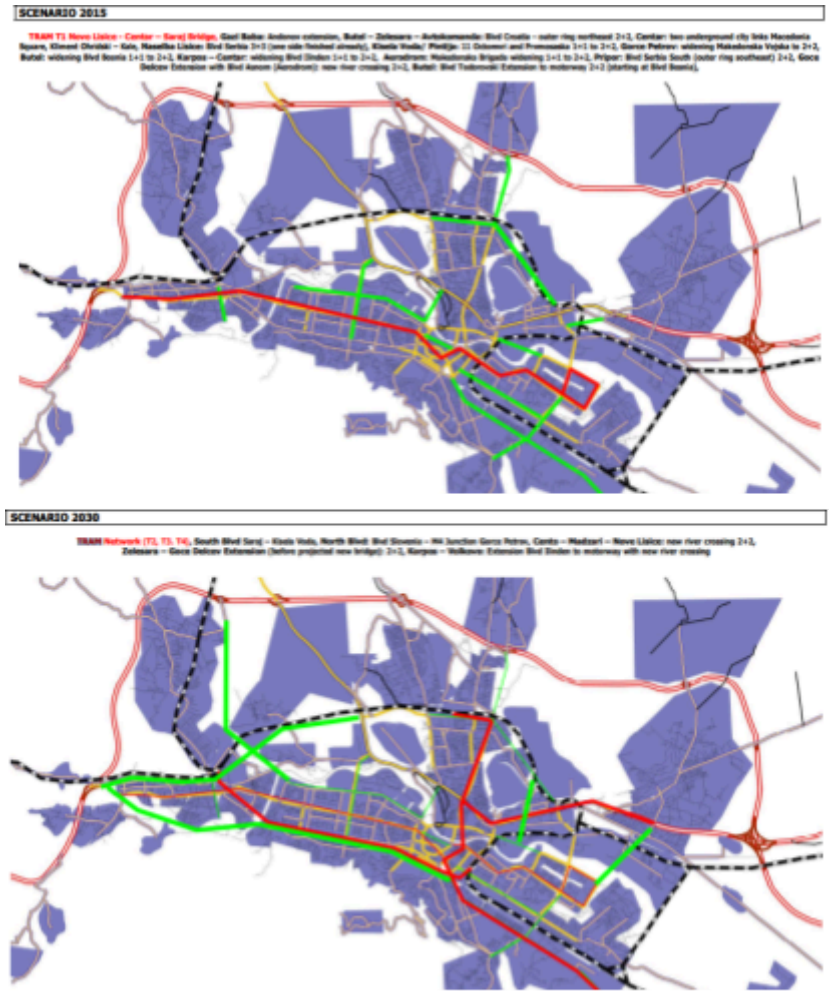

Figure 30: Plans to introduce a tram in Skopje, with Line 1 meant to be implemented by 2015 (top) and the rest by 2030 (bottom)

Skopje completed the program with a draft Sustainable Urban Transportation Plan (SUTP), the first of its kind in the country, which included a high level of stakeholder engagement required for CIVITAS projects but, again, unique for the national context [113]. The SUTP was officially adopted and enacted in 2011. With references to sustainability, citizen participation, and European funding and guidelines, the plan gave hope for future citizen-centered decarbonization, but has not been fully realized. For example, a tramway should have had one line by 2015 and four by 2030 (Figure 30) [114].

With complicated political dynamics between Skopje's Mayor and N.Macedonia's Prime Minister, despite shared loyalty to the conservative VMRO-DPMNE party, the PM was able to prevent construction of trams by interfering in the European lobbying process. As a result, the PM shifted policy and funding towards a double-decker bus project [115], inspired by the London buses which had been destroyed in the earthquake. Likely envisioning the historical image as more in line with the Skopje 2014 plan, 202 Chinese-manufactured 'London buses' were introduced into the bus fleet in 2012 (Figure 31) [102]. The result of this project was further proof of the complexity of multi-level governance in Skopje, particularly the national overruling of local government despite the post-independence decentralization of power.

Figure 31: A picture taken of the double decker bus fleet shortly after procurement in 2013

In 2017, the European context became even more significant in Skopje's urban mobility sector as the EU established the Southeast Europe Transport Community, modeled on the earlier Energy Community. The goal of the Transport Community is to align the EU accession countries with the transport chapter of the *acquis*, emphasize protection of the environment, and consider social dimensions in developing the mobility sectors of the relevant parties. Establishment

proves increased involvement of the EU within these countries as well as higher barriers of entry as policy directives evolve. The treaty lays out deadlines for national transport developments, and upon establishment the community has worked on more local levels with policy development, analysis, and progress reports [116].

Immediately after establishment of the Transport Community, Skopje expanded involvement in European projects. For example, the Skopje Velo-City project was undertaken with the German Ministry for Economic Cooperation and Development to motivate increased cycling culture, building off recent cycling subsidies and over 60km of lane construction [117]. Due to increased actions, 2018 was the last time that the EU reported some progress in N.Macedonia meeting Chapter 14 of the *acquis* in their yearly Stabilization and Association Agreement Report. Since then, the report has stayed consistent: the country is Moderately Prepared, but making Limited Progress and lacking adjustment to previous recommendations. A timeline summarizing the predominant events in the urban mobility sector follows:

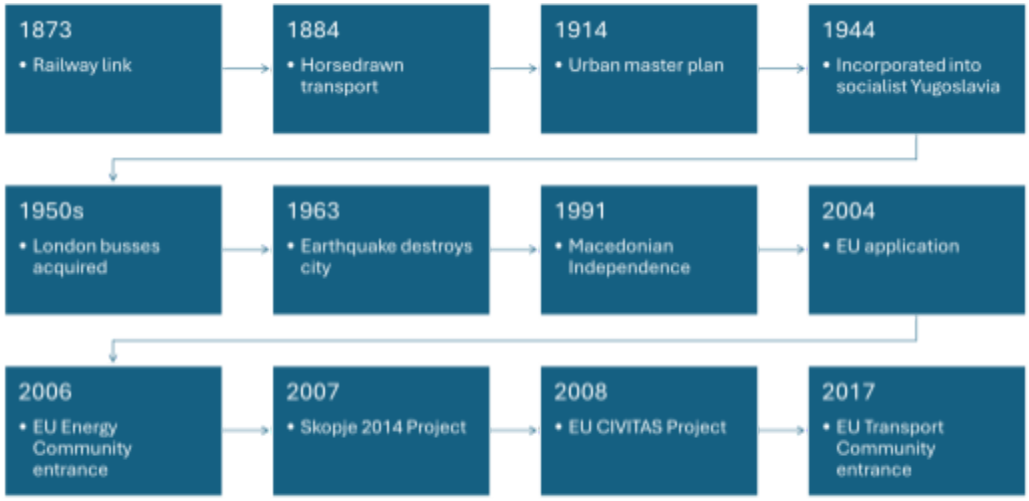

Figure 32: Timeline of the significant urban mobility developments in Skopje

The situation in N.Macedonia has been complicated since 2018, due to global factors like COVID and local factors such as shifting governments. In Skopje itself, a controversial and unpredictable mayor has been in power since 2021, meaning current and future movements in decarbonizing the urban mobility sector are not certain. However, progress at other levels of government continues, such as the ongoing development of an EU-funded SUMP since 2023. For the purpose of this thesis, the most relevant policies to evaluate and provide recommendations based on are [118], [119], [120]:

Table 6: The policy texts evaluated for Skopje

Plan Name	Introduction Year	Short Description
Strategy for Sustainable and Smart Mobility in the Western Balkans	2023	Replication and realignment of the EU Sustainable and Smart Mobility Strategy for the WB political context
North Macedonia National Transport Strategy	2018	Outline for how N Macedonia will transpose EU Guidelines related to transport in the period 2018-2030
City of Skopje Sustainable Urban Mobility Plan	2011	A SUMP developed with and for the City of Skopje through the CIVITAS RENAISSANCE project

3.3 Citizens and AAAQ

After conducting interviews and observations in Skopje, it became clear that the city has high potential for decarbonizing their urban mobility, and has already in the past implemented very good infrastructure and projects. Though the European level is quite unsatisfactory under the framework of AAAQ, it is because of the Transport Community's emphasis on regional connectivity and TEN-T project completion [118] rather than addressing localized issues which falls more directly under jurisdiction of national and local authorities. National and municipal policy is well directed for citizens, expanded upon below.

In implementation, the city has failed to achieve many targets and ideas set in the 2011 plan, attributed by almost all interviewees to the perennial presence of corruption and a lack of political will. It was clear that citizens have a lack of belief in the government as well as faith in the possibility of positive change. Under current Mayor Danela Arsovska, this lack of belief has expanded as interviewees associated with NGOs described how most city projects have been halted, no matter their stage of completion. Any connections between citizens, activist groups, or NGOs with the government have been essentially severed, leading to very little action in the city. As the City of Skopje continues to develop an updated SUMP, they can work to counter misdirection and build on the positive blueprint constructed in 2011. Regarding Skopje's indicator table (Table 7), the remainder of this subchapter will provide explanations for each rating before summarizing primary challenges.[18]

[18] With extended explanation in Annex G

		Key:	One	Two	Three
CATEGORY	**MEASURES**	**European Policy Rating**	**National Policy Rating**	**Municipal Policy Rating**	**Implementation**
Availability:					
	Opportunity for Active Mobility				
	Multimodal Integration				
	Modal Split				
	Labor Market Considerations				
Accessibility:					
	Affordability				
	Accessibility for Mobility Impaired				
	Appropriate Access Despite Socioeconomic Status				
	Time Accessible				
Acceptability:					
	Reducing Noise Pollution				
	Reducing Climactic Impact				
	Urban Functional Diversity				
	Mobility Space Usage				
	Citizen Engagement				
Quality:					
	Safety Measures				
	Congestion / Delays / Frequency				
	Comfort				
	Satisfaction				
	Security				

Table 7: Completed AAAQ Indicator Table for Skopje

3.3.1 Availability

Interviewees S-1, S-2, S-3, and S-5 emphasized that active mobility infrastructure is available across the city, particularly on the roads controlled by the City of Skopje, but not so much on ten sub-municipality roads. This is a result of the city's SUMP and the Skopje Velo-City plan, with political will proving to quickly implement long, protected bike lanes along boulevards and the Vardar River. Interviewees described a 'renaissance' for cycling across the city, with more people realizing the benefits of cycling for transport and recreational activity. Interviewee S-1 highlighted many citizens are even taking mountain bikes up the Public Transport Skopje (JSP)'s operated Vodno Mountain gondola (Figure 33). As for walking, which

Figure 33: Vardar River Path (left) and Vodno Mountain Gondola (right)

is responsible for 1⁄3 of the city's modal share, a similar story prevails - good infrastructure in the City of Skopje's jurisdiction, well separated from cars and cyclists, with less consistency among the sub-municipalities. Green spaces are abundant and accessible across the city.

Lack of consistency across sub-municipalities greatly challenges multimodal integration. Cycling is only an option for specific routes, while a survey which interviewee S-2 helped coordinate indicated that citizens were not satisfied with bike parking options supplied at transportation interchanges [121]. Bicycles are not allowed on buses, some of which are too small and none of which have bike racks, while interviewees S-1 and S-2 highlighted their dismay at the same being true of the deteriorating train system [122]. Buses run in a radial fashion to the transportation center, with few routes connecting municipalities and some even running on routes that no longer serve any citizen's needs, such as one line which S-3 said "runs to an old factory area where no industry or housing exists anymore". Analysis indicates that the majority of the multimodal trips in the city are done bus+walk as a result of these downfalls.

Interviewees explained NGO or government attempts to resolve some of these challenges in the 5 years prior. Interviewee S-3 indicated a bike parking area was built by the transportation center and well received by the public, but suffered theft and maintenance issues that led to its removal. Private bike sharing services, described by S-1 and S-2, had been implemented at least twice to support the growth of cycling but similarly suffered from theft which led to short lifespans. More recently, the government has introduced e-scooters from Turkish company TinTin, which interviewees S-2 and S-5 indicated is done more for tourists than for citizens. For commuters and regional multimodal connectivity, planned PnRs which were well defined in the municipal plan are still unrealized a decade later [123].

Poor multimodal integration, in conjunction with later described deteriorating quality and comfort of buses, contribute to a modal shift moving towards cars and away from the previous even split between cars, PT, and walking. Interviewee S-2 emphasized “the reliance on cars in post-socialist countries is a result of capitalism, not socialism”. Deterioration of PT in the modal share is especially recent, though: JSP bus ridership dropped 15 million passengers from 2019-2022, and the train ridership numbers have continued dropping from the all-time lows in 2021-2022. As passengers share lower satisfaction, so does the workforce. Striking is prevalent as JSP (Figure 34) continuously struggles to pay salaries on time and the city council is not always willing to provide subsidies. The number of JSP employees has dropped by 300 under the current Mayor despite routes remaining the same, with low- or no-pay contributing to bus drivers leaving for Germany, according to interviewee S-1 and S-7.

Figure 34: Image from a bus drivers strike in Skopje, November 2022

3.3.2 Accessibility

PT is not free for all citizens of Skopje, but as many as 70% of bus passengers are exempt from payment, according to the JSP director [124]. People are generally most satisfied by the cost of buses and trains out of all transport related variables. However, purchasing tickets is not so accessible; ticket offices are poorly signed and in weird locations, such as below the street level, while buying a ticket on the bus via phone call is complex, more expensive, and impossible via the phone carriers used by interviewee S-1, S-3, and S-5. Accessibility for mobility impaired people is at the baseline on Skopje's London-esque buses, though Skopje's newer buses have improved capacity and simplicity.

In urban areas, sharp kerbs prevent access for mobility impaired people and for cyclists across the city, an issue which interviewee S-1 said "would be incredibly easy to resolve". Interviewees S-1 and S-5 also highlighted how deteriorated paths and ramps generally reduce accessibility to public areas such as the Vardar River Path. Accessibility for mobility impaired people has especially worsened in the train station, which the Agency for Regulation of the Railway Sector found was "inaccessible for people with special needs, was dirty and unlit, and had locked waiting rooms and toilets" [112]. The city is well covered by PT options, but the average trip lying at 40+ minutes [125] means these options are not preferred, but are taken due to the broad inability to afford private vehicles.

On the positive side, accessibility across gender barriers is mentioned within the municipal policy [120], a progressive and important highlight considering the importance of safe transportation for all of the population. A prevalent problem which has failed to be addressed, though, is ethnic disparities in coverage, significant due to the constant tensions that exist within Skopje and the broader WB region. Interviewee S-1 highlighted how better bike connectivity could mitigate ethnic tensions, describing how "opportunity to bike allows me to access parts of the city I would otherwise not go and interact with people that I otherwise would not see".

3.3.3 Acceptability

With car ownership and usage still rising and the majority share of cars being those which no longer meet European emissions standards (Figure 35) purchased second-hand, noise pollution and climate impact is poorly mitigated despite good policy direction to do so.

Interviewee S-2 highlighted Skopje's position within a valley, causing it to experience some of the worst air pollution in the world. Transport, as well as heating and industrial emissions, plays

Figure 35: Example of old vehicles still prevalent around Skopje

a significant role in these emissions. Electrifying vehicles would not fill the gap as the city is still largely reliant on coal for its energy mix. Greenery, helpful for creating noise barriers and absorbing emissions, is quite prevalent in the city, but interviewees S-2 and S-4 were quick to point out that it has been and could be greener. Honking is quite a prevalent noise nuisance in the city, with interviewee S-1 expressing during the interview that senseless honking on the city's side streets "is not democracy" and represents the challenging political position the city finds itself in.

Citizens are well connected to green space both within the city and out, with Vodno Mountain and Matka Canyon (Figure 36) reachable on city bus lines. Urban functional diversity

Figure 36: Matka Canyon (left) and Vodno Mountain (right)

is only touched on at the municipal level of policy, and interviewees S-2, S-5, and S-7 indicated that citizens experienced different levels of connection to services depending on the municipality they lived in. Disparity in service implementation in municipalities is a lasting example of the Yugoslav planning which emphasized providing carless access to services after the 1963 earthquake. Spatial utilization of cars in the post-socialist era is proof of the lasting urban footprint not being built for abundant car usage, as well as proving the cultural view of what a car is in the city for those who use them. Poor parking enforcement allows cars to take up more space than is allotted to them, parking anywhere a bollard does not prevent them doing so while central parking lots meant to alleviate congestion remain empty. Some sporadic progression does occur, such as the narrowing of lanes on busy boulevards to create space for AM, good integration of bike lanes and bus stops, and widespread bollard usage (Figure 37) to improve safety and make up for poor enforcement.

Figure 37: Examples of the widespread bollard use across Skopje

The bollards are a terrific example of successful citizen engagement, which interviewee S-2 said were lobbied for by NaTochak, an activist group in the city. However, citizen engagement programs have only generally been proposed in reactive ways, requesting reaction to implemented measures rather than to policy and planning. A recent NaTochak study found 37.4% of respondents felt their municipality does nothing for AM safety [121]. To all interviewees, it was a clear lack of political will; if the government wanted to engage the citizens, it would. It has in the past, but the current mayor cut off the existing limited discourse. As interviewee S-2 put it, “the city council is no longer a citizen assembly, it is a business assembly”.

3.3.4 Quality

On public transportation, a challenge for safety and comfort is the way drivers drive, particularly with a large portion of ridership being older people or mobility impaired people. Buses often part with the doors open, even on busy buses with a lot of people standing, and make jerky stops and starts. This compounds general discomfort that has resulted from years of poor

Figure 38: Deteriorated seats from the inside of a JSP bus, showing a lack of maintenance and cleanliness

cleaning and maintenance (Figure 38) [125], with deteriorating interiors referenced by interviewees S-3, S-6, amd S-7 why they prefer taking cars and taxis, by interviewees S-1, S-2, and S-5 why they preferred cycling, and interviewee S-4 why they preferred walking over taking the bus. Despite general dissatisfaction, buses are still the most economical way to get around the city, so those unwilling or unable to pay for alternative transportation still frequent the PT system, and as such JSP has minimal economical pressure to change. It shows within the buses that comfort and satisfaction were not referenced at the municipal level of policy, and helps explain the modal shift towards cars. Maintenance problems also compound safety problems, with failure to replace stolen items, such as the red emergency hammers vital for an accident scenario.

A redeeming factor of the bus system is the widespread presence of electronic boards which effectively and accurately present bus arrival times. A lasting mark of the CIVITAS RENAISSANCE project, these boards alert citizens of the delays that have become prevalent due to poor vehicle maintenance, strikes or worker shortages, and continuous congestion in the city.

Congestion continues as car usage has not been properly discouraged the way policy defined, through parking cost increases and low emissions zones. Conversely, congestion reducing measures cannot be properly implemented upon citizens until the mobility systems are functioning well enough to be a viable alternative; a double-edged sword for the city. Overall, it is obvious that there is minimal to no discourse between the citizens and the city or transport operators, with comfort and satisfaction steadily declining in the PT system [125].

Figure 39: Digital timing boards, the lasting physical mark of CIVITAS RENAISSANCE

3.4 Summary of Challenges

Summarization of the challenges that Skopje faces when it comes to decarbonizing their urban mobility system in a citizen-centered way must first address the **ongoing corruption** across the government and public services. Corruption consistently affects the ability of the government to achieve anything, and creates a systematic lack of trust between citizens and the government.[19] Additionally, a **lack of political will** was the next most highlighted challenge by citizens. With the right government in place, the City of Skopje is able to achieve major change rather quickly, no matter whether those changes are positive, such as with bike lane construction in the late 2010s, or negative, such as the Skopje 2014 project which caused international and municipal political turmoil. The current mayor's political will was to prevent the completion of any major project in Skopje, including the near-completion Bus Rapid Transit (BRT) project that would have potentially changed the shape of PT in the city moving forwards. When the government does act, it is **generally reactive rather than proactive**, only really addressing

[19] See Ankica Sokolic's thesis, 2024

issues after they are impacting citizens. This stems from a lack of engagement and alternative priorities related to corruption.

All of these political issues exacerbate the geographical and cultural challenges inherent to the need to decarbonize. Geographically, **the placement of Skopje within the Vardar Valley** means that air pollution will settle in the valley, particularly in the winters when a mix of heavy traffic, old cars, and the use of wood for heating is especially impactful [126]. Culturally, the **continued positive view of car ownership and usage** leads to the **continued import of old European vehicles**, bought at affordable prices due to their non-alignment with EU emission standards. Private vehicles and taxis have become preferred not only because of the impact of post-socialism, but also due to the decrease of comfort and satisfaction of the current transport system due to a **lack of maintenance and upkeep**. The increase of cars contradicts not only the PT of Skopje but the pedestrians, as self-centered vehicle use and **non-adjustment to the increase of cyclists** decreases safety and further affects positive modal shifts. **Funding** is continuously a challenge to overcome, with funding programs having a limited duration and malalignment to the local context.

Despite all the negatives found through the triangular methodology, it is also clear that the city has a lot of potential for future positive development. Namely, the footprint of the city is well constructed both for maintaining and expanding green space and providing better mobility services in the form of transport priority lanes, bike paths, and pedestrian walkways. Additionally, there are small adjustments that can be quickly and cheaply implemented to overcome a variety of the challenges which the city faces. However, keeping the status quo has a negative future outlook. The inability to complete positive projects due to corruption, government changes, and a lack of political will to follow what citizens want and need deeply affects positive major changes from happening. In the ongoing creation of Skopje's new SUMP, ideas need to be grounded amongst these challenges and be realistic so that slow and steady progress can be made in meeting the AAAQ standards of citizens.

Chapter 4: Discussion

4.1 Comparison

Figure 40: A combined timeline showing the common histories of urban mobility in Tallinn and Skopje

A certain synchronicity appears in the histories of Tallinn and Skopje (Figure 40), from a history of foreign rule to a nearly identical period of socialist governance before achieving independence in the same year. Each city was introduced to train and tram lines around the same time and suffered great destruction through war or through natural disaster. The urban footprint of each city is built around a historical center, with urban sprawl resulting from urbanization in the mid- to late-19th century. Cars were a rarity for both until 1991, when European cars flooded in and affected the culture and politics of urban mobility. When capitalism became dominant, the respective countries applied for EU accession. However, a divergence began to appear, as Estonia was allowed an easy accession process, while N.Macedonia has continually faced internal and external challenges to overcoming accession barriers. As recently as the CREATE project from 2017, the cities were identified under the European framework as being at similar points in their mobility decarbonization processes. Each city established quality, largely citizen-centered SUMPs which positively detailed how they would continue on an ecologically, socially, and economically sustainable path for their urban mobility plans. Through more

effective implementation, Tallinn has diverged from Skopje, becoming the European Green Capital in 2023.

Nevertheless, the cities still face similar and intersectional challenges to decarbonize urban mobility while properly prioritizing citizens. Principally, breaking the path of car dependence which each city continues down today. This research has shown that continued increase of car ownership today can no longer be fully attributed to effects of the socialism to capitalism transition. Rather, it is due to governmental inability to persuade. Other cultural challenges arise in each city as car owners, who have been allowed to dominate urban streets for the last 30 years, have not yet adjusted to the rapid increase in cyclists and cycling infrastructure across the cities. That being said, prioritization is not helped by the way in which cycling infrastructure has so far been implemented; routes need to be made better connected and better protected to improve safety and comfortability for cyclists.

Enhancing connectivity of cycle routes also applies to suburban areas of each city; large suburbs built during times of socialist governance have been left disconnected because of failed PT implementation that has never been fully resolved. These suburbs also have insufficient services, meaning people are more likely to rely on cars to better connect themselves to needed services. However, Tallinn's Pirita Promenade and Skopje's Vardu River Bike Path are exemplary examples of utile paths promoting AM and connecting citizens to nature, while central boulevards with green corridors and significant bike paths allow for branching.

Indubitably, similar quandaries for the cities are not all big picture. Overcoming smaller infrastructural problems would create a profound impact in addressing citizens' needs and changing habits, in particular with micro-mobility. Options such as e-scooters provide a nuisance for citizens within each city, while city bikes similarly cannot resolve the problem. Other prevalent problems include asynchronous pedestrian lights which leave pedestrians and cyclists stranded amidst busy roads, weather challenges which affect people's general habits based on maintenance levels, and fluctuating citizen support.

The overarching challenge ahead of each city is the ability to fulfill promises made to and for citizens. Tallinn is restricted because of potential overpromising, offering an amazing but ambitious vision of the city that may be difficult to match with political and financial barriers. Skopje offered a slightly more realistic plan for the sustainable urban mobility plan, but is still unable to implement any bigger picture projects due to a combination of political corruption and

lack of political will. Each city needs to smartly manage funds, which are hard to reach and often poorly directed, and better engage with citizens, who can make or break short- and long-term policy targets. In each city, rapid expansion poses a change for construction regulation. Tallinn and Skopje have begun their divergence in urban mobility, but are still close enough in their progressions to share similar challenges. Each city has made achievements in urban mobility that can be a model for the other to follow, each city with its own large potential to achieve citizen-centered decarbonization.

4.2 Opportunities

Upcoming European level recognitions provide both cities an opportunity to gather political will, private and public funding, and citizen support towards related developments in the urban mobility sector. For Tallinn, their selection as European Capital of Sport 2025 provides opportunity to direct events and infrastructure for AM, under the 'Tallinn Moves' mobility program. In Skopje, selection as a European Capital of Culture in 2028 allows time for the city to build capacity and implement a similar action plan to improve and share the city's urban mobility.

The EU framework allows for cooperation and knowledge sharing between cities. As these two cities share some challenges and excel separately in other arenas, there is a significant opportunity for city officials, NGO professionals, and citizens to learn from each other and accelerate each others' mobility transitions. Interviewee S-1 demonstrated this through their experience with the URBACT exchange program, representing Tetovo, N.Macedonia on site in Tartu, Estonia. Tallinn has a specific dedication to international cooperation, through their SUMP action program 'develop international association and participation in cooperation projects', as well as to the Western Balkans with continued support of WB accession. Under the framework of the Transport Community, Skopje is broadly directed towards regional and international cooperation, with that being the primary emphasis of the political group. A connection is not impossible, due to previous connections in the CREATE project and similar encounters with CIVITAS.

Outside of direct cooperation, the cities have much to learn from each other's histories and presents in urban mobility. Foremost are the national train systems, which each city is central to in its country. Since market liberalization of the train system in N.Macedonia, the two state-owned train companies have become two of the largest debtors in the country and the train

system is self-imploding. It is a similar position Estonia was able to drag itself out of upon European integration, an experience that N.Macedonia should look at as inspiration of renationalization, if it is not too late, or to allow private companies in, if it is. Europe should be hugely impactful in either decision, as European policies for the WB are largely centralized in TEN-T regulation and reviving infrastructure that can promote these TEN-Ts. With money and policy flowing the right direction, such as €560 million through the European Bank of Reconstruction and Development for connection with Bulgaria [127] and a memorandum with Serbia to reconnect Belgrade and Skopje [128], each level is important in a 'rail renaissance' in N.Macedonia (Figure 41). [112]

Figure 41: N.Macedonia's Existing Rail Infrastructure

Tallinn provides inspiration with its free PT system[20]. Skopje deployed free PT for a short time in February 2016 as a way to reduce pollution at a time it was the most polluted capital in Europe [126][21]. Based on interviews with people from both Tallinn and Skopje, this should not be Skopje's immediate path. The upcoming SUMP of Skopje should not propose a similar policy as it will not have the desired impact on reducing car usage and increasing PT ownership. This is similarly true for other ambitious plans Skopje has included in its past SUMP and transportation plans, which have failed to come to fruition. Historical and current politics suggest that the city

[20] Including Dunkirk and Montpellier
[21] Presumably because it did not have the desired impact or JSP could not afford it

should take small steps to move in the positive direction, a sentiment echoed by many interviewees with one saying the city is not ready to implement a plan like Amsterdam's. Any European or other international cooperation should reflect this.

Unfortunately, foreign missions in Skopje, including from Europe, are focused on human rights and democracy. As such, they have been largely ineffective and have resulted in frustration. International interventions and partnerships have not effectively considered the bigger picture; they would impact bigger change if they focused on changing human functions rather than focusing on governance. Interviewee S-2 expressed frustration that Europe particularly is very involved in Skopje, but only[22] works in the mobility sector during mobility week in September because of broad scale EU political priorities. The story is similar in Tallinn. Though Tallinn has more access to European funds than Skopje, there is an inherent direction policy needs to take to access funding despite local context.

Tallinn can learn from Skopje's bike path / bus stop integration (Figure 42). On Tallinn's busiest streets, bike lanes overlap with bus stops. Skopje excels placing bike lanes around bus stops to maintain safety and reduce interruption for both forms of transportation. With each city

Figure 42: A good example of Skopje's bike path / bus stop integration which is consistent across the city.

experiencing a 'cycling boom', they have different ways to cooperate in this arena. The cities are connected on EuroVelo Route #11, built by the European Cyclist Federation [129], and motivated by a recent European Declaration on Cycling to progress infrastructure and cycling

[22] And, emphasizing, ONLY

uptake at the city level [90]. Another way Tallinn can learn from Skopje is widespread implementation of digital boards. With Tallinn's advancement in digitalisation since independence in 1991, they should be well placed to implement these boards across the city rather than just in central areas.

For Skopje, Tallinn can be a model for how to implement digitalisation in city urban planning. Construction of a digital twin in Tallinn has revolutionized spatial planning and product development, as well as improving connectivity of public and private companies in further development of the city. N.Macedonia has worked on digitalisation projects with Estonia before, as Interviewee S-1 recalled with e-Estonia learning programs while they were in school, and development of a nationwide e-identity system in 2023 [130]. Based on the success of past programs, a forway can be made into urban planning and transportation arenas, potentially even through CIVITAS SPINE. Additionally, one way interviewees shared that Skopje could find inspiration from Tallinn is with punctuality and frequency. Part of the reason Tallinn does not prioritize digital boards across the city is the efficiency of the system, supported by good maintenance and prioritization of public transportation. Small changes in these arenas would make a big difference in Skopje's system.

Low cost flights emerging from liberalization of air transportation in Eastern Europe in the mid 2000s [131] have connected young people to the vision of another life, raising awareness of other possibilities in urban planning and mobility and breaking the status quo. This is not true just of East-West European connections, but also intra-Eastern European connection. Beyond using each other as reference, there are cities from across Europe which interviewees highlighted as good practice to follow for each city. This included Lljubliana, Slovenia, because of the way they efficiently implemented their SUMP and created a large pedestrian area in the center of the city; Pontevedra, Spain, which rapidly drove cars out of the city in the name of safety and preservation; and Prague, Czechia for the way the city has connected the image of its PT to the image of the city. Under international frameworks of which Tallinn and Skopje are a part of, such as the Global Covenant of Mayors, finding inspirations at the political level to inspire localized solutions to decarbonizing urban mobility would undoubtedly accelerate the benefit for the city's citizens.

4.3 Policy Recommendations

For Europe:

1. **Restrict Exports of Non-EU Emission Standard Compliant Vehicles:** Considering connectivity of the WB region with the EU, there should be improved restrictions on exportation of vehicles from the EU that are no longer compliant with increasing emissions standards. The EU has the means to implement better deconstruction and recycling programs for older vehicles that, in turn, could improve the circular economy of the EU passenger vehicle sector while reducing maleffect on air quality and emissions in the WB.
2. **Include National and Municipal Transport in the Transport Community's Sustainable and Smart Mobility Strategy:** Current strategy scores poorly for the AAAQ indicators because it almost purely emphasizes international connections without touching on national nor municipal levels despite working towards alignment of transport sector targets with the *acquis*. Understanding restrictions of the community but also their influence, bringing urban and intra-urban mobility into policy and funding picture would impact significant positive change in the WB region.
3. **Increase Flexibility of Urban Mobility Funding Initiatives:** As is the general problem with international development funding, there are preconceptions at the EU level of funding about the direction that funding should take. This subsequently molds policy, and projects get implemented that do not necessarily address the local level problems. With the importance of EU funding across European cities and countries, there should be an increase in flexibility when it comes to how funding is used so long as the funding addresses the broader issue of decarbonizing urban mobility.

For Both Tallinn and Skopje:

1. **Codify Cyclist Protections into Law:** Each city should implement laws protecting cyclists from drivers, with the target of shifting the cultural challenges presented by the increase of cyclists.
2. **Expanding Digitalisation of Urban Planning:** Building on previous partnerships under e-Estonia, including e-schooling and e-identification system, begin the process of building a digital twin for Skopje. A digital twin would be hugely impactful in the urban

planning sector, better connecting public and private developments and improving the accuracy of changes [132].

3. **Cycling Partnerships:** With each city's upcoming European Capital titles, the recent European Declaration on Cycling, and the connection between the 2 cities on EuroVelo Route #11, establishing a partnership to improve cycling conditions in each city would be well timed. The partnership would be mostly knowledge sharing, with Skopje providing knowledge on building protected bike lanes that are well-integrated with the existing bus and pedestrian systems and Tallinn providing knowledge on prioritizing bike path maintenance and implementation of micro-infrastructure at road crossings that makes cycling a more safe and comfortable experience. Additionally, Tallinn and its private enterprises (primarily Bikeep) can bring knowledge to improve multimodal integration between cycling and other forms of decarbonized transportation.
4. **Introducing Art (Back) Into the Transport Systems to Improve Citizen Uptake:** Considering past positive examples of beautifying PT and AM bringing a positive modal shift, including with CIVITAS MIMOSA in Tallinn and with external examples like the metro systems of London, Berlin, and Moscow, connecting local artists and culture to the urban mobility system can significantly impact citizens' views of the public space. Combined with the effects of history and with Europeanization / Modernization, citizens' experiences on PT shifts the vision of this public space and impacts progress towards decarbonization; the cities should remember the impact of PT as a public space [133].

For Tallinn:

1. **Improve Citizen Engagement Processes:** Considering the negative impact of the recent construction on Tallinn citizens' view of the PT system, and the voiced discontent with the levels of engagement experienced by interviewees, Tallinn needs to follow through with their policy and improve citizen engagement. A breadth of work has already been done to create a vision for Tallinn in 2035 with specific projects along the way. The port tram line was one of these plans, but there are other tram lines more relevant for citizens that would have been better received. In the future, improved engagement will help with successful implementation.
2. **Enhancing Cycle Lane Connectivity:** Cycle lanes are a perfect representation of the challenges which Tallinn faces in fulfilling its promises - lanes across the city are

disconnected and lead cyclists on to roads or places without dedicated cycle areas without warning. A full lane should be connected before the next project is undertaken; a policy lesson applicable across every sector.

3. **Last-Mile Improvements:** Tallinn has attempted to tackle this issue for years without much success. The prioritization of pedestrian paths and cycle lanes during the winter are huge positives, but further solutions need to be provided for the older population. Micro-PT options such as small buses could fill the gap in densely populated suburbs.

For Skopje:

1. **Implementing a Public-Private Partnership in the National Rail System**: Considering the standstill and regression of the rail system since the halfway privatization of Macedonian rail occurred, the country should implement a public-private partnership (PPP) in the rail system. Considering the failure of the state-owned private companies to maintain the rail infrastructure and schedule in the country, PPPs offer a way for the country to rebuild the system with support from an external strong institution. Additionally, while lots of European funding is already going into saving the train system, particularly international connections, the EU looks favorably upon privatization in the transport sector, which would help continue funding. There are PPP rail system examples across the EU which N.Macedonia could look to for inspiration, including in the Netherlands.
2. **Addressing Poor Intracity Connection:** A multifaceted topic, involving improvements and additions for both PT and AM. In the public transportation system, this means developing a new bus plan through investment in research of improved route placement and deployment of the improved map. It can be done with existing infrastructure and rolling stock, implementing long overdue updates to the map. For cycle routes, it means building on positive implementation on the main streets of Skopje and deploying similar protected cycle routes across the streets under the jurisdiction of the sub-municipalities as well. This can be done through the Public Enterprise “Streets and Roads” - Skopje, which ‘performs activities of special interest’.
3. **Improving Maintenance and Cleaning Regimes:** One of the largest barriers to PT uptake in Skopje has been the degrading cleanliness and quality of buses, trains, stops, and stations. Keeping these places cleaner and more comfortable would be a good step to

immediately improve the vision of the public transport system. Additionally, if the city were to upgrade the rolling stock or introduce trams in the future, building these habits would be beneficial to maintain their quality and comfortability for a longer time than the current fleet has lasted. Maintenance would include replacing stolen items from the bus, such as the stolen red hammers meant to break windows in case of emergency, which has impacted safety.

4. **Introducing a City Architect or Equivalent Position:** Recently, Tallinn established a City Architect position whose main role is to manage strategic and high-value spatial planning issues about urban space, coordinating different departments and stakeholders in the construction projects which affect the city's infrastructure. Part of the reason for the introduction of this position is to control the rapid construction happening in the city, a challenge which Skopje is also facing. Introducing a City Architect as a part of some additional restructuring could allow for controlled construction and better enforcement of regulations.

Conclusion

This thesis evaluates the paths to and current status of urban mobility systems of two Eastern European cities, one Baltic and one Balkan, to answer the research question of how citizens' needs are considered in the policy processes of decarbonizing urban mobility. To do so, the thesis first emphasizes historical contextualization, ensuring the effect of post-socialism is only contributed as a part of the broader study of the city's position. Then, it utilizes a framework that defines citizens' needs within a city, revealing how the path to functional urban mobility lies with improved public transportation and useful active mobility options rather than the electrification of personal vehicles. The framework is an adaptation of the health sector's Availability, Accessibility, Acceptability, and Quality framework, adjusted to assess urban mobility. In application of the framework, the study uses a triangulation method with discourse analysis, interviews, and observations to assess and explain indicator results for Tallinn and Skopje.

The investigation identifies three key findings. Firstly, Tallinn and Skopje shared significant historical events that have impacted and continue to impact their respective urban mobility systems today. Secondly, although the monetary and political influence of the European Union has influenced the divergence of the two cities since Estonia's accession and N.Macedonia's application in 2004, it has not played the most significant role. Rather, political corruption and lack of political will in Skopje is primarily responsible. Thirdly, the emphasis of citizens in the two cities' urban mobility systems today is generally well stated within national and municipal policy, but not well implemented. Tallinn and Skopje share certain challenges re-centering citizens in implementation of policies, but exhibit different strengths. Both cities teeter on the edge of individual car usage path dependence, but simultaneously exhibit high potential to break this path dependence in favor of uptake of public transportation and active mobility options. Through the policy recommendations introduced in this thesis, Tallinn and Skopje would take a significant step towards decarbonizing their urban mobility, bettering the mental and physical health, quality of life, and economic situation of its citizens.

Limitations and Future Work

This study was limited due to time and resource restrictions. Additionally, language barriers[23] simultaneously reduced the quantity of documentation available for analysis, posed challenges when contacting potential interviewees, and limited the ability to conduct surveys. Observation periods were limited to 4 days per city. The scope of the study did not allow for confirmation of AAAQ indicators, which should be locally adjusted via a sociological study. Nevertheless, this study lays the groundwork for further research in Tallinn and Skopje, as well as a model for studying the broader topic of citizen-centered urban mobility design in other urban contexts. The study's well-rounded methodology, particularly with the deep dive into historical contexts and commitment to learning the on-the-ground situation through both interviews and observations, add to the body of knowledge.

Extensive citizen engagement should be prioritized in future work in the form of surveys or interviews, and longer observational periods to confirm the breadth of the challenges at hand. The effect of history should continue to be explored, beyond the traditional view of post-socialism, considering the effect of socialism in some but not all aspects of their governance structures. At the theoretical level, sociological work should be undertaken to confirm citizens' needs in the scope of mobility decarbonization, contributing to the cultural shift required to break car path dependence. Similarly, future work could study the connection between Europeanization and the uptake of cycling, which would benefit the understanding of supporting cultural shifts in the mobility sector. Finally, methods developed and applied here could be utilized in understudied cities across the world in order to design change in developing urban areas and provide recommendations to benefit governments, bolster decarbonisation targets, and improve quality of life.

[23] With the researcher speaking English and French, not Estonian or Macedonian

Annex

Annex A: Extended Introduction to the Cities

From 1945 to 1991, the political systems in both Tallinn and Skopje were both socialist. Socialism had come to be under Joseph Stalin in the USSR and Josip Broz Tito in Yugoslavia, with each leader developing their ideologies following WW1 under shared oppositions to classical liberalism, to the extent that the Yugoslavian constitution was inspired by the Soviet constitution. However, the USSR and Yugoslavia applied these Marxist ideals slightly differently, with the divergence beginning due to Tito's critiques of Stalin's government. Specifically, Tito despised the bureaucracy and centralization of the Soviet state, believing it betrayed the simplest socialist principles. As such, Yugoslavia deployed a worker-controlled economy, known today as market socialism [29]. At the citizen level, this meant more autonomy and influence for Yugoslav citizens, with Yugoslavia obtaining a reputation for being the freest and most liberal of the Communist states in Europe. The reputation did not necessarily bear truth, as opposition to the Titoist government was repressed, similar to but not as widespread as the repression conducted by the Stalinist government in the USSR [30]. Moreover, citizens of the USSR were treated differently based on their ethnicity, with Russians prioritized over citizens of the satellite states which Stalin used as buffers against the capitalist world, such as Estonia. Tito viewed such satellite states as a form of capitalist imperialism, and disagreements between internal ideology and foreign policy led to the Tito-Stalin Split, the initial divergence between these two European socialist republics [29].

Despite this political divergence in the overall models of socialism employed in Titoist and Stalinist systems, fundamental commonalities remained that guided the creation and implementation of policy and of urban planning. Both Tallinn and Skopje were planned and built oriented towards PT and pedestrians rather than cars, as opposition to private ownership remained central to governance in each country. The idea behind development of infrastructure was rooted in citizens' productivity, with the governments historically aiming to connect citizens with their places of work and the essential services that maintained their productivity. That was until the 'Revolutions of 1989', which resulted in both Estonia and the Republic of Macedonia undertaking a rapid reform of economic and policies upon their respective independences in

1991. Their big-bang approach to reform has been shown to be the more effective way to mitigate inequality and poverty and motivate strong institutions, including political institutions [31].

Power transfer from socialism to capitalism affected the PT infrastructure differently, but the capitalism-induced increase in private car ownership coincided with negative cultural views and usage rates of PT [32]. The novel ideas of ownership, modernity, and freedom of movement meant a widespread uptake of car usage which has, in turn, guided policy and funding towards car-related mobility [33]. Breaking this path dependence is no simple task, particularly with the cultural connections of PT to the socialist era and restricted freedoms.

Each city has been growing closer to the EU in the post-socialist era, signifying their westward shift politically and culturally following national independence. However, it is evident that the role of the EU is fundamentally different in Estonia and N.Macedonia as the former is a Member State and the latter is in the Accession stage. There are historical implications behind this difference, expanded upon in Chapters 2 and 3, and the role of Europe is still distinctively present in each country. So, this does not provide an analytical barrier but rather provides an opportunity to evaluate the role of Europe in policy and culture at a more fundamental level. Through the scope of urban mobility transformations, we can evaluate the effect of the EU through the concept of Europeanization, which will be discussed later in the Framework section. At a European level, Tallinn and Skopje have already been involved in shared mobility projects, including CREATE [134] and CIVITAS [135]. In these projects, they shared similar goals of developing citizen-centered sustainable, smart, and resilient mobility systems.

At the city level, Tallinn and Skopje are both the economic and population centers of their countries, handling a high level of citizen mobility both internally for those living in the city and externally for those who commute to the city. They share a similar population size and face similar urban sprawl challenges for the mobility system. Each city has evolved to be car-centric, but lack affordable parking options in the city limits. In terms of grander challenges, they of course face climate change and its causes and effects, particularly air pollution and heat. They each additionally manage ethnic tensions, still between Estonians and Russians in Tallinn and between Macedonians and Albanians, among others, in Skopje. A figure providing further profile of the two cities follows.

Annex B: Interview Cold-Email Template

Skopje:

Subject – Research: Citizen Involvement in Skopje's Urban Mobility

Body -

Добро утро Г / Г-ѓа,

I am working on a research project studying urban mobility policy in Skopje and would love your insights. Are you available for a 30-60 minute virtual interview?

If so, please select the time and date best for you at this link or reply to this email and let me know when would be best for you.

Thank you for your time, and I truly look forward to speaking with you soon!

Sincerely,

Aston Horton
Student at CIFE pursuing a Masters in Global Energy Transition and Governance

Tallinn:
Subject – Research: Citizen Involvement in Tallinn's Urban Mobility
Body -

Tere hommikust härra/proua _____,

I am working on a research project studying urban mobility policy in Tallinn and would love your insights. Are you available for a 30-60 minute virtual interview?

If so, please select the time and date best for you at this link or reply to this email and let me know when would be best for you.

Thank you for your time, and I truly look forward to speaking with you soon!

Sincerely,

Aston Horton
Student at CIFE pursuing a Masters in Global Energy Transition and Governance

Annex C: Interview Guidelines

Introduction:

- Greetings, introduce myself, thank them for their time
- May I record this interview?
- Learn more about what this person does
    - Where are they from, what is their background, how are they involved now?
    - Do they live in the city? Do they use public transportation / bike lanes?

RO1: Why history matters in urban mobility politics and culture in Tallinn and/or Skopje

- What is the cultural impact of socialist history on how public transport is seen today?
    - How do you feel it as someone who lives in the city?
- What is the political effect of socialist history on urban planning?
- Post-socialism political effect on what is emphasized in mobility policies?
- How is old infrastructure viewed today?
- In your opinion, how did perceptions about cars change since 1991?

RO2: Discover the role and extent of Europeanization in the two cities' urban mobility policy and citizen centering

- How often do you work with European partners on urban planning projects?
- Do you feel your city is included at the European level?
- What major changes have there been since joining the European Union?
- How connected are European-level policies and citizens?
- How has the transport system evolved due to the influence of the European Union?
- As a citizen in the city, how European do you feel?

RO3: Emphasize if and how citizens are centered and at what stage are they engaged or left out, and analyze how

- What is the current state of urban mobility?
- How do you perceive the emphasis of citizens' in urban mobility policies?
- What is the current emphasis when it comes to urban mobility?
- What are your priorities when developing urban planning policy?
- Can you provide some examples of successful integration or accessibility initiatives in the transport system?
- As a resident of the city, do you feel like the system is built with your needs in mind?
- Do you know of citizen participation programs?
- Can you provide some examples of successful initiatives in the transport system?

Conclusion:

- What are some remaining key challenges in decarbonizing urban mobility?
    - How can you overcome these challenges?

Annex D: Positionality

Despite the conceptual framework and methodology developed to successfully respond to this research question in a neutral way, preconceptions and interpretation will undoubtedly impact the study [136]. The researcher's positionality is from a position of power, being a white man from an upper-middle class background and growing up in the United States with dual nationality. This is important to signify due to the nature of inequities present in the urban mobility sector, as in most areas of life, and for the view of urban mobility affected by societal hierarchies and a car-centric background.

Annex E - Indicator Table and Explanation

An empty indicator table is displayed below (Figure 43), followed by further explanations of the indicators searched for within the measures explained below.

CATEGORY	MEASURES	European Policy Rating	National Policy Rating	Municipal Policy Rating	Implementation
Availability:					
	Opportunity for Active Mobility				
	Multimodal Integration				
	Modal Split				
	Labor Market Considerations				
Accessibility:					
	Affordability				
	Accessibility for Mobility Impaired				
	Appropriate Access Despite Socio-Demographic Characteristics				
	Time Accessible				
Acceptability:					
	Reducing Noise Pollution				
	Reducing Climactic Impact				
	Urban Functional Diversity				
	Mobility Space Usage				
	Citizen Engagement				
Quality:					
	Safety Measures				
	Congestion / Delays / Frequency				
	Comfort				
	Satisfaction				
	Security				

Figure 43: Empty AAAQ Indicator Table

Availability is split between four categories:

- *Opportunity for Active Mobility*, defined by the existence of infrastructure and policy supporting the development and utilization of AM infrastructure.
- *Multimodal Integration*, defined by supported connection between different modes of transportation, such as between public transportation, cycling highways, and pedestrian walkways.
- *Modal Split*, or the share of transportation modes used to move around a city. A decreasing modal share of cars accompanied with an increased share of public transport and AM options indicates availability of these car alternatives.
- *Labor Market Considerations*, which includes planning a training pipeline and considering employee compensation, comfort, and satisfaction.

Accessibility is split between four categories:

- *Affordability* of urban mobility, with specific attention paid to the lowest income citizens.
- *Accessibility for Mobility Impaired*, referencing disabled, injured, or old people who have difficulty boarding public transport, reaching stops, or moving around pedestrian walkways. In this case, accessibility refers to special attention paid to help these citizens access the urban mobility network.
- *Appropriate Access Despite Sociodemographic Characteristics* implies that all people should be considered in the policy processes, with special considerations based on gender, race, neighborhood, occupation, income, etc.
- *Time Accessible*, indicating that urban mobility options provided are accessible based on speed, frequency, and consistency.

Acceptability is split between four categories:

- *Reducing Noise Pollution* refers to the reducing the amount of noise caused by the mobility system, which impacts physical and mental health. It refers to noise from combustion engines, honking, and tire vibrations.
- *Reducing Climate Impact* is the basis of sustainable urban mobility and at the heart of citizen's motivation to shift their mobility habits. It encompasses reducing air pollution, noise pollution, greenhouse gas emissions, and increasing energy efficiency.
- *Urban Functional Diversity* is a novel term which refers to the various activities within an urban environment that citizens want to and should be connected to, including green space, cultural locations, public buildings, vital services, transportation hubs, etc.
- *Mobility Space Usage* indicates the amount of space within an urban area occupied by road and other mobility avenues, with the ideal street setting minimizing the space taken up by vehicles in the interest of safe and habitable streets.
- *Citizen Engagement* can mean a wide variety of activities, but in general refers to governmental attempts to speak with or survey citizens before or doing policy

development in order to ensure these important stakeholders are aligned with the city development.

Quality is divided between five categories:

- *Safety Measures* refers to accident and death reductions, which new systems should seek to minimize. It is primarily measured in year-to-year numbers and should separately account for car accidents and AM accidents.
- *Congestion/Delays/Frequency* takes into account commute times and and delay time on-peak versus off-peak, primarily emphasizing controlling the busiest times in the city.
- *Comfort* is somewhat self explanatory, highlighting how the seating and climate of public transport vehicles, stops, and public pathways impacts citizen usage.
- *Satisfaction* is again self explanatory, as a basemark tool to measure how generally happy or unhappy citizens are with the system.
- *Security* refers to on-mobility crime rates and perceived sense of safety, with both quantitative and qualitative data being important here for citizens to feel safe enough to use the urban mobility systems.

Annex F: More Detailed Explanation of Tallinn's AAAQ Analysis

Active mobility:

The European level Smart and Sustainable Mobility Strategy [86] brushed wide strokes over the importance of AM in the decarbonization of urban mobility, describing the importance but falling short of proposing how to support and build accessible, acceptable, and quality cycling infrastructure. More recently, the EU has introduced the European Declaration on Cycling [90], addressing many gaps of the previous AM policies. Building on the Road Infrastructure Safety Management policy from 2019 [137], the European policy level has well addressed the gaps of AM provision and provided better direction for national and municipal policy in this arena.

At the Estonian and Tallinn policy levels, AM was well defined and emphasized, with specific implementation plans providing a good path forwards for the city. A core network of cycle paths is set to be completed by 2035, targeting placing 95% of the population within a 500 meters of home from a baseline of 40.8%. However, the urban bike lanes leave something to be desired, as they are. While there are positive examples of well defined and separated bike lanes outside of the city center, such as along the Pirita Beach and to the Lasnamäe suburb, both on the east side of the city, the paths in the more urbanized areas of the cities leave something to be

desired. One interviewee described the difficulty of planning routes through the city, while another emphasized that “red lines aren’t infrastructure”. Bike lanes start and stop abruptly, with poor signage and dangerous crossings through busy bus stops. The opposition party highlighted the disconnectivity in March this year, saying that the paths are being built ‘too haphazardly’, and would be better built in a ‘gradual manner’ [91].

Multimodal Integration:

Across the board, multimodal integration is well emphasized and implemented in Tallinn. At the European level, seamless mobility is emphasized while Mobility as a Service (MaaS), a type of service which enables planning, booking, and paying for multimodal travel through one digital platform, is highlighted as the future of urban mobility. Local private companies play an important role in this, particularly Bolt, Tallink, and Bikeep. Bolt provides multiple services, including taxis, short-term car rentals, and electric scooters, which aid with the ‘last-mile’ of trips not effectively covered by PT. Tallink is a large conglomerate who, among other things, operates frequent ferry services to Helsinki and is the largest traditional taxi company in the city. An interviewee from the company told me about their struggles competing with the relatively young Bolt, as well as difficulties lobbying themselves with the city government. Finally, Bikeep is a digital bike rack company which is free for users in Tallinn, prevalent particularly at transport hubs where they support multimodal transport through affordable and secure locking.

As with any other city who has private e-scooter or e-bike services, they are strewn across the city, blocking bike paths and busy pedestrian walkways. The difficulty of enforcing parking restrictions through digital means fails to mitigate bad practice, which clearly frustrated the multiple citizens observed stopping their bikes to move e-scooters from their path. Tallinn did implement a pilot project [92] to improve parking in the second-half of 2023, with expansions in 2024 giving promise to resolve the parking problem [93].

Modal Split:

At the national level, Estonia is working to mitigate the continually increasing level of car usage through the implementation of a car registration tax. A hot topic in the country right now, nearly every interviewee brought this up as a significant environmentally-positive change. As it stands, Estonia is the only EU country without a car registration tax, and faces backlash from the rural population who is worse connected both to other urban areas and to Tallinn. Tactically, Tallinn has emphasized building PnRs on the outskirts of the city which are cheap to

park at and with free PT connections, hopefully shortening the distance driven. However, parking is not yet expensive nor inconvenient enough in the city center to persuade usage of these PnRs, multiple interviewees shared.

Concerning the environmental impact, modal split is the basis of each level of policy, with the idea of 15-minute city implementation in Tallinn based around decreasing car use and effective targets in place at the city level to track progress. The policy of shifting modal share targets a 50% share of PT / AM by 2025, and 70% by 2035. Specific targets are also laid out by type of user; 41% in 2020 to 70% in 2035 for the employed, 54% in 2020 to 90% in 2035 for residents, and 87% in 2019 to 95% in 2035 for school kids. One year from the initial target deadline, the share is….

Labor market considerations:

When it comes to considering workers in the transport and mobility sector, the supranational level is the most specific about training and reskilling people potential workers. As the policy level becomes more local, these emphases are lost. In Tallinn's SUMP [88], there is no mention of training, though there is an important adage of worker satisfaction. In implementation, it seems that the system does not struggle with maintaining the workforce needed both for operating the PT or for the major construction projects in the sector. However, while riding the tram with an interviewee, it was highlighted that the diversion of tramway ends has moved drivers away from rest areas, a problem some drivers had vocalized to the interviewee. Beyond satisfaction issues, this can cause safety issues if drivers are not provided sufficient breaks.

Affordability:

The discourse around the topic of PT affordability in Tallinn is fascinating. Free PT for all citizens has been in place for about 11 years now, with expansion to those parking in PnRs as explained earlier. Within the municipal policy, there are stated goals of regional expansion to the rest of Harju County to allow for an accessible and affordable system for everyone in the region. Plans to do so begin by unifying the fare base and connecting the transport tickets all into one, providing cheap or free transport throughout the county. As Tallinn is the center of business and culture in the country, this would positively help reduce car usage to access the city, and allow the municipality to potentially affect similar positive changes at a national level.

Nevertheless, almost every interviewee brought up problems with the free transportation system. While they all enjoyed the benefits of free transportation and indicated their satisfaction with the system, a common counterpoint was the lack of a marked increase in ridership over the past 11 years. It complicates the funding going towards the system, which has further decreased with the decision to phase out advertisements from the system (decreasing the budget of the system by about 200,000 euros). Interviewees reinforced that Tourists and other non-citizens are the primary income of the system, not only through tickets but even more through fines assessed for non-paying riders. The national level of policy shared an evaluation that the modal share is continually moving towards cars, with minimal impact from Tallinn's free public transport. While the situation of free PT is complicated, an interviewee from the government told me it would be 'political suicide' if a politician were to suggest removing it, so the affordability for citizens will likely stay in place for the long term.

Accessibility for Mobility Impaired Groups:

Planning in Estonia and Tallinn is organized under the principles of universal design, 7 principles made to define accessibility for all within system design. As a relatively novel implementation, some of the older trams still running on Tallinn's lines are quite inaccessible, with large step ups and stairs into the trams. No route is solely serviced by these trams, though, which provide a nostalgic image of the city fitting for the image Tallinn wants to create. Additionally, a very recent update to the timetables of buses and trams is positive as it includes little blue lines indicating which times will be serviced by an accessible bus or tram. With the problem primarily showing itself on the tram lines, which run about every 5 minutes, there is a minimal time delay impact of inaccessible vehicles.

As for pedestrian pathways, good maintenance through the city is emphasized through policy, shifting the priority from roads to walkways and bike paths. However, one interviewee indicated that the city government has not yet proven this ideal shift in the winter months. Clearing snow from sidewalks had been the responsibility of property owners, but now the city has taken over the responsibility as there had been long standing issues with timely clearance. It remains to be seen how the city manages the new responsibility of prioritizing AM routes over roads in the coming winters.

Appropriate Access Despite Socio-Demographic Characteristics:

None of the policies applicable to Tallinn's urban mobility system fully cover potential disparities of access based on socio-demographic characteristics, though each policy does cover specific groups. At the European and national level, much of the emphasis is placed on better connecting rural populations with urban areas and better aligning the country with TEN-T regulations. At the municipal level in Tallinn, a majority of the focus through policy and Key Performance Indicators (KPIs) is on providing accessibility for young people, primarily schoolchildren. Policy at all levels particularly fails to address gender and racial gaps to access, without indicating specifically that they have ensured that these problems do not exist within the system.

In implementation, more emphasis should be placed on older people and ethnic minorities who may have lesser access within the system. As described in the history section, large suburban areas such as Mustamäe or Lasnamäe had previously been emphasized in potential Soviet-era projects that were not fully completed. This has left these populous areas connected in a less-than ideal way, via buses on busy highways. Additionally, with these suburbs mostly populated by young Russians as the city was growing in the mid-20th century, they are today both the oldest and most Russian areas of the city. More efficient connection with the city needs to be provided as defined in the policy, and the huge gap in micro-mobility for the older population in these areas needs to be re-addressed after the lack of long term implementation of self-driving minibusses which had previously experienced pilot periods. Micro-mobility gaps for older people exist across the city of Tallinn, as the best option the city and its private businesses have so far provided is Bolt's scooters, which are largely unsafe for older populations.

Time Accessible:

Time accessibility has begun to be addressed in Tallinn, with room for improvement but few glaring issues. Within the policy, action programs emphasized reducing connection times for traffic, including for PT, accompanied by improved reliability and punctuality. Along with changes in traffic prioritization, this can be achieved through implementation of road types and the construction of planned lines through the city. While the construction is completed over the next decade, diligent planning needs to be done to ensure that travel times via PT or AM do not skyrocket as a result. One interviewee described the case of their grandmother, who is mobility limited, having to ride the bus 1 hour to get to her closest grocery store rather than the usual 10

minutes as a result of construction. Aside from construction, though, one interviewee from Skopje who had recently visited Tallinn as a part of the URBACT project shared that the frequency and punctuality of transport in Tallinn should be a model for other European cities.

Reducing Noise Pollution:

At the European level, noise pollution is interestingly emphasized through reducing the noise of tire vibration, while at national and local levels it is emphasized through the noise of combustion engines and creating green noise barriers. While the combination of these policies addressed reducing noise pollution in the long term, the short term results are not especially present. The city has some good practice, namely the recently pedestrianized Vana-Kalamaja, and some challenges, namely the huge amount of construction being undertaken to shape the city to the Tallinn 2035 vision.

Reducing Climatic Impact:

Overall, the big picture of reducing climate impact is the reason behind the decarbonized urban mobility policies and is well addressed across a wide array of impacts, including air pollutants and healthy ecology. At the European level, the ambitious emission reduction targets are well centered in the understanding that people are willing to switch to more sustainable transport for their daily mobility as long as the conditions of cost, availability, speed, and comfort are met. For Tallinn, they aim to reduce emissions by 70% in 2035 as compared to 2007 emissions, including emission free PT[24]. While it remains to be seen how successful Tallinn is at implementing its vast goals, their policies are well directed and implementation has so far been conducted in good environmental faith.

Urban Functional Diversity:

At the European and national levels, the significance of citizens' need to access both essential and non-essential services is not mentioned, undermining the significant connection of services and urban mobility. The local level does it very well, in the mission to develop Tallinn and its sub-communities into a 15-minute city with ‘diverse possibilities’ at the heart of Tallinn 2035’s vision for shared streets and inviting city centers. Envisioning a sub-20 minute connection between Tallinn’s centers and cub-centers, policy within the city can be a model for other European cities to follow in their mission to achieve ideal 15-minute cities. In implementation, some 15-minute cities in ‘hip’ areas near the city center, such as Kalamaja, have been successful.

[24] Without taking into account particulate matter or production and end-of-life recycling

However, various citizen interviewees shared that suburbs experience a lack of services and deserve extra emphasis to fill the service gap that is historically in place from Soviet implementation deficiency.

Mobility Space Usage:

There is no baseline set at the supranational level in the EU for minimizing urban space utilized by roads or mobility paths. At national and municipal levels of policy, mobility space usage is defined and well coordinated, particularly through Estonia's priority of taking space for PT and AM at the expense of space given to cars and Tallinn's definition of types of roads to be applied in the urban space. An interviewee highlighted that there are no highways in Estonia, meaning that drivers from across the country are generally used to skinnier roads, which can be observed with the minimal wide roadways in the city. However, there are still spaces in the city that are 4-6 lanes wide, particularly near busy pedestrian areas such as the old town and the skyscraper area. Biking infrastructure in these areas is very minimal, with skinny, painted, poorly maintained lanes providing unsafe passages for the cyclists using them. To continue reducing the inclination to drive a car, emphasis should be placed on reducing road space for cars in favor of people and protected bike lanes, reaffirming that streets are not a transport corridor, but rather a living environment.

Citizen Engagement:

At every level of policy, there is an emphasis placed on the fact that citizens care about forthcoming challenges and changes, but does not necessarily outline engagement programs. The municipal policy does the best in outlining that citizen engagement programs should take place, but are largely in place to gauge satisfaction with changes rather than proactive engagement in the plan creation process. An interviewee confided that they feel very disconnected from the decision making process, so much so that they would not say that they are a 'Tallinner'. Another, who is heavily involved in the youth council for Rail Baltica, indicated that there are no youth engagement programs for the city. Additionally, they have been pushed away from the transport department despite their work to promote PT, particularly trams, in the city.

At a broader scale, the newest construction project in the city displays the separation between the city and the citizens' will. The new tram line under construction at the port area is clearly built for tourists, with multiple interviewees highlighting the lack of local housing in the area and the clear intentions of the project to be for mass people movement rather than useful

movement of locals. Perhaps a result of the need for further funding in the transport system, the project has created a sense of disdain for citizens and interrupted their day-to-day lives without effecting a tangible long-term benefit. Discourse in the city proves that prioritization of this project, partly resulting from a lack of citizen engagement, may have a negative effect on PT usage and support.

Safety Measures:

On paper, good measures are in place to increase safety for all road and path users, but road deaths and accidents are still increasing. Increased accidents mean the country is further behind KPIs set at the national level, with the cause being a rise in the amount of driving under the influence of alcohol and speeding. Accidents were most common in Tallinn and in Tartu, the second biggest city, with an increase in accidents impacting pedestrians. One interviewee mused that the implementation of pedestrian safety infrastructure such as bollards in dangerous areas would be impactful in protecting pedestrians and cyclists. Many bike lanes do not have distinct separation from pedestrian walkways or roads, whereas better separation would improve safety and comfortability. This is additionally prevalent with the lap of separation between bike lanes and bus stops, with large buses and trolleybuses having to cross bike lanes to reach the stops, creating a high potential for incident as the number of cyclists in the city continues to increase.

Congestion/Delays/Frequency:

While the policy at the municipal level positively emphasizes the reduction of traffic congestion, prevention and communication of PT delays, and increased frequency of PT, the policy is very focused on the city center and primary corridors. There is a discernible gap between this emphasis and the state of play on mobility branches and suburban areas, particularly seen through the timing board technology at bus stops provided as a part of the CIVITAS involvement. While these boards are very useful near the city center, they progressively cease to exist the further from the center one goes.

Comfort:

The public transportation is spacious, well-maintained, and sparsely overcrowded. This is aided by the emphasis placed on modal shift and on maintaining a positive image of the system, as well as good governance prioritizing cleaning and maintenance. AM is mostly comfortable, though there are cultural and infrastructural challenges that sometimes affect the comfortability of cyclists and pedestrians. Observationally, it seems that drivers are very respectful of

pedestrians, and vice versa, providing them space and following road laws concerning priority of passage. Conversely, it seems that drivers have not yet adjusted to the recent large uptake of cyclists, sometimes treating them as another vehicle operator or respecting them less than pedestrians. Additionally, places in the city where cyclists and pedestrians are only separated by red paint[25] leads to a high risk of collision due to the same lack of adjustment to urban cyclists. Finally, all forms of AM users find themselves in an uncomfortable position in the middle of pretty much any large road in Tallinn, where they become stuck because of the lack of synchronicity of the pedestrian lights.

Satisfaction:

Perceived satisfaction with the urban mobility system fluctuates depending on the mode or the topic discussed. Generally, the city has done well at creating a positive image of the public transportation system, building on micro-projects and successes from the CIVITAS involvement. A mix of old and new, such as with trams around the city center and with trolley buses to Mustamäe, has created a connection between transportation and citizens, while good maintenance and comfort supports continuing satisfaction. Nevertheless, aforementioned construction impacts the satisfaction rapidly, with multiple interviewees indicating the general decrease recently. As for AM options, there is especially a lack of satisfaction with the state of bike lane connectivity and walkway maintenance, as previously discussed. The city needs to maintain engagement and measure satisfaction, as outlined through policy such as with measuring awareness and satisfaction of city spatial development plans.

Security:

A positive step was taken recently in Tallinn, where the city listened to the citizens and began to provide 24-hour PT coverage, providing buses on major routes which had previously been underserved during the night when people generally feel the least safe. The crime rate is generally low in Tallinn, and interviewees indicated that they felt much safer than in other cities while moving around. Nevertheless, the city needs to keep a pulse on this topic, especially with the potential for ethnic disagreements.

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[25] Which, restating an earlier interview quote, is not infrastructure

Annex G: More Detailed Explanation of Skopje's AAAQ Analysis

Opportunity for Active Mobility:

Recent research done by Skopje based NGOs found that Centar was the most bike friendly municipality, though with a top score of only 49/100 [121], indicating there is much more work to be done in policy and infrastructure. Complex jurisdiction in Skopje means that the bigger roads and boulevards are controlled by the City of Skopje, while the 10 municipalities control the roads which branch off. The impact is clear, with the best defined and protected bike lanes existing near the city center and along primary boulevards but failing to connect each municipality with the others. Additionally, a 'bike highway' along the Vardar River well connects the municipalities which fall along the main river body, but does not run past the city borders to suburbs nor along the river branches to other municipalities.

Multiple interviewees indicated more and more people are realizing the benefits of using a bicycle for recreational activities and transport. The Vardar Mountain and its gondola are a hugely popular spot for mountain bikers from around Skopje, while young people are taking advantage of city subsidies to buy a new bike rather than buying a car to get around the city. Despite barriers such as poorly maintained ramps to the river bike path or blockages by parked cars and above ground bins, bottom-up approaches have been particularly effective to influencing change in the AM sector. Widespread usage of bollards, seen lining many bike paths and busy pedestrian walkways, were implemented to prevent blockages and help overcome poor enforcement.

Multimodal Integration:

One of the most significant problems of the system highlighted by interviewees was the poor connections between municipalities. It is clear through the bus route map that the plan is radial around the transport center, with minimal buses between municipalities. On top of that, interviewees indicated that the bus plan has not been updated for a long time, meaning that there are routes which do not serve modern citizens' needs and run a sort of ghost path to former industrial areas. Analysis developed in preparation for municipal policy indicates that the majority of trips in the city are done bus + walk, but not bus + bus or any other combination. In combination with the constant rise of car ownership, this shows the failure of the routes in terms of modal connection and integration.

Additionally, the transport system has diminished other potential multimodal connections, particularly bike-train connections. While the old regional trains allowed bikes on the train, allowing city cycling enthusiasts to access the rest of the country and suburban populations to commute with a combination of train and bike, the acquisition of new trains made this reality impossible. The new trains, bought in 2014 from a Chinese company in an effort to modernize the system, are skinnier than old trains[26] and were only able to carry some 60% of the existing passenger traffic at the time [122]. To help reconnect bikes and trains, a bike parking area near the main station by one of the interviewed NGOs had been well received by the public, but it suffered with theft and maintenance issues that led to its removal. Private bike sharing services have been introduced on multiple occasions by private firms to help impact a similar multimodal interchange, but again failed due to parts thefts. More recently, the government has introduced e-scooters from Turkish company TinTin, a decision which is not so positively viewed by many citizens. Finally, for car / PT integration, PnRs were well defined in the municipal plan but have not been implemented, proving that Skopje has failed multimodal integration on a variety of fronts.

Modal Split:

Though car ownership rates are increasing in Skopje, the basis of the modal split so far seems to be evenly shared between cars, PT, and walking. A widespread psychological change would be the only way to prevent a modal split moving towards cars, but the government is not doing themselves nor the citizens a favor with the policy implementation so far. Interviewees indicated that the effect of post-socialist ownership of cars is now overplayed, particularly considering it has now been more than 30 years since the change of government. On the contrary, they widely cited the state of buses as the reason why they and their friends and family prefer cars and taxis in many contexts.

In 2022, Skopje's city-suburban bus lines carried approximately 28.5 million passengers, a drop of 15 million from the pre-COVID era. To combat the rapid drop of ridership, a Bus Rapid Transit project was undertaken to transport urban mobility in the city in a holistic way. 13 km of routes with 2 pivotal interchanges, 21 stops, and electric buses would have halved commute time, created jobs, and increased commerce in the city, until the project was cut off by Mayor Arsovska [138].

[26] By 2 seats per row in second class and by 1 seat in first, according to an interviewee

Labor Market Considerations:

In a unique situation for Skopje's indicators, the European level well addresses labor market considerations, emphasizing adjusting the workforce to a changing digital environment, protecting workers rights, and addressing injustice for workers from skills mismatch to gender imbalance. However, national and municipal policy which is more relevant in the urban sector fails to address these problems at all. JSP, the state-owner bus operator in Skopje, has had continuous problems paying salaries on time as they operate at a loss and rely on subsidies from the City of Skopje [139]. In January 2024, the city council failed to pass a resolution which would have ended a strike of employees who had not received their December wages. The ongoing problem was exacerbated by the city council's change of heart, surprising especially as the funds necessary to pay employee's wages had long been supported by the government. While Mayor Arsovska was pro-subsidies, she was also proud of the fact that the number of JSP employees has decreased by 300 since she took office with no new employment. In the context of a municipal labor diagnostic undertaken just before she took office in 2021, which said there was a deficit of drivers in Skopje and a 14.4% unemployment rate [140], the comments are representative of the underlying policy failures. Amongst these challenges of low- or no-pay, an interviewee indicated that Skopje's bus drivers are leaving for Germany for better pay and stability.

Affordability:

Although PT is not free in Skopje, many of the system users are exempt from payment; around 70% of bus passengers, according to JSP director Krste Petrevski [124]. When mentioned in interviews, people were generally satisfied with the cost, but brought up the difficulty of buying tickets in the first place. Ticket offices are poorly signed and located in weird locations, such as in a room below the street level. To buy a ticket on the bus, the process is done via phone call while the phone is pressed against the ticket machine. Prices are higher for this form of payment, and some interviewees highlighted that they were unable to buy tickets on the bus with their phone company because of a lack of agreement. Barriers to payment make citizens who do not qualify for free transportation susceptible to fines.

Accessibility for Mobility Impaired:

Infrastructure seems to be well placed in the public transportation system for accessibility by mobility impaired people, but less so on pedestrian pathways. Sharp kerbs prevent access to

paths from the road in many parts of the city, an issue which one interviewee said ‘would be incredibly easy to resolve’. Interviewees also highlighted how deteriorated paths and ramps generally affect the accessibility to public areas such as the Vardar River Path and there is a disconnect of blind guidance lines on the city's most pedestrianized streets. The relevant policy at the national and municipal levels well emphasizes the importance of access, so it is again a problem of implementation and maintenance.

Appropriate Access Despite Socio-Demographic Characteristics:

Poor connectivity of municipalities and suburbs between non-Centar areas either by bus, train, or bike means that people are mobility deficient based on where they live. Furthermore, a large part of the population was unable to afford cars when the last Urban Mobility Plan was created in 2011, meaning people were explicitly left with poor access based on where they lived and their socioeconomic status. Fortunately, the city is generally well covered by transportation options, but the problem lies in the amount of time these options take to exploit as will be expanded in the next point.

On the positive side, gender is mentioned within the municipal policy, a progressive and important highlight considering the importance of safe transportation for all of the population. A prevalent problem which has failed to be addressed is ethnic disparities in coverage, significant due to the constant tensions that exist within Skopje and the broader region as a whole. One interviewee highlighted how important better bike connectivity is to mitigate ethnic tensions, describing how the opportunity to bike would allow them to access parts of the city they would otherwise not go and interact with people that they otherwise would not see.

Time Accessible:

To repeat earlier points, disconnectivity between municipalities by bus or bike means that any trip between non-central locations is long. This has a profound impact on cultural prioritization of cars, which is often much more convenient with the system as it currently is. Many interviewees brought up disconnectivity and long trips as one of the primary challenges which Skopje’s urban mobility system faces, and emphasized that resolving this issue must happen before other car mitigation policies could be successfully implemented. Failure to complete projects such as BRT or and allowing regional train lines to fall into disrepair means car usage will continue to increase as any time effective alternative disappears.

Reducing Noise Pollution:

Noise pollution is emphasized throughout the national and municipal policy as the governments recognize the influence of increased car ownership, particularly of aging cars from the EU, on traffic noise in urban areas. However, car ownership and usage is still rising, with an influx of older, louder cars coming into the country with a lack of a national standard. Though the city is quite green, there is a lack of green barriers or other noise reduction tactics, and interviewees emphasized that while the nature of the city seemed quite green it was and can always be better. There is also a huge honking habit in Skopje, representative of the individualistic, self-centered nature which has come from a modal shift towards cars. During one interview, the interviewee expressed that the senseless honking on the city's side streets 'is not democracy' and represented the challenging political position the city finds itself in.

Reducing Climatic Impact:

Of course, reducing climatic impact is mentioned as the basis of all mobility planning as the Transport Community, national government, and municipal governments all work on aligning their policies with the EU in the work towards accession. This point is made at the beginning of every policy, proving Europeanization at the European level. In implementation, the city has been unsuccessful in reducing emissions and air pollution. During the winters, air pollution is one of the highest in Europe and the world because of a combination of transport, heating, and industry emissions settling in the Vardar Valley within which Skopje lies. While heating and industry emissions are the fault of the national energy mix still being heavily reliant on coal, the transport sector is partly influenced by the EU's strengthening emissions standards which leads to cheap private vehicle sales from EU countries to the Western Balkans.

Urban Functional Diversity:

The topic of connecting citizens to needed and desired services is only touched on at the municipal level of policy, but people seem to be well connected to green space and shops in their localities and to vital services located in the city center. Interviewees indicated that certain municipalities, such as Aerodrome, are better supplied than others. These municipalities are a positive example of implementation from Yugoslav planning in the aftermath of the 1963 earthquake, with an emphasis on providing citizens easy access to needed services while car ownership remained low.

Mobility Space Usage:

Mobility space usage has sporadically moved in a positive direction in Skopje, particularly with the measures to reduce lane width on wide boulevards to create space for bikes and bus stops. Some municipalities have implemented similar measures with protected bike lanes on smaller roads, but a standard has certainly not been implemented across the city. Cars take up a lot of city space, blocking bike lanes and pedestrian walkways wherever bollards are not blocking them from doing so. Poor parking enforcement means that cars take up more space than is allotted to them, leaving parking structures built in the city center to alleviate congestion empty. Where the best bike lanes exist, they are well protected with bollards and kerbs, with cycle lanes very well integrated around bus stops to improve safety and ease of access for both bus and passenger. The sacrifice of space for cars made this effective planning and implementation possible and can be replicated on a broader scale in the city.

Citizen Engagement:

In policy, citizen engagement programs are only proposed in reactive ways, requesting reaction to implemented measures rather than input during the policy development and implementation. Through the methodology, it was discovered that reaction rather than proaction is a constant government issue across topic areas and projects. Generally, and especially under the current mayor, there is a huge disconnect between the current government and citizens. Though a climate assembly was established for citizens, interviewees told me that previously limited discourse avenues between activist groups, NGOs, and the government have now been fully cut off. For example, each NGO highlighted that the Skopje 2024 urban plan had 0 public participation despite the existence of the climate assembly. It is clear to all that the problem is a lack of political will; if the government wanted to work with the citizens or provide more citizen-centered policy and infrastructure, they would. However, as one interviewee defined, the city council is no longer a citizen assembly, it is a business assembly.

Safety Measures:

Within the city, it is impossible to not notice the bollards that line major boulevards and many walkways and pedestrian corners. Implementation of the bollards is a success story of the activist group NaTochak, an organization of cyclists who came together under the action of ‘critical mass’ or safety in numbers, according to an interviewee who was a member. They are hugely necessary for maintaining safety in the city due to the huge amount of speeding cars and

motorcycles and sporadic parking habits, all prevalent from the lack of enforcement in the city. Nonetheless, a recent NoTochak study found that 37.4% of respondents felt their municipality does nothing for the safety of cyclists, particularly those cycling with children.

On public transportation, an interesting safety challenge is the way drivers drive. They often part with the doors open, even on busy buses with a lot of people standing, and accelerate and decelerate quite quickly. As will be expanded on in the comfort section, the quality of the buses interiors is deteriorating, indicating that they are not well maintained across the board. Significant for this section also is the number of interior features that have been stolen from buses, including many missing red emergency hammers.

Congestion/Delays/Frequency:

The most prevalent lasting mark of the CIVITAS RENAISSANCE project on Skopje is the widespread presence of electronic boards efficiently and accurately presenting bus arrival times. Boards exist across the city's suburbs, not just near the center, and allow for clear and easy understanding by system utilizers. However, delays are common because of poor vehicle maintenance, strikes or worker shortages due to poor worker protections, and the problem of congestion. Car usage has not been properly discouraged in the city center through parking cost increases and low emission zones that had been proposed through national and municipal policies but minimally implemented. On the other hand, it is unfair for these congestion reducing measures to be implemented before larger problems with the mobility system are first resolved, producing a double-edged sword for the city.

Comfort:

Cited by many interviewees as a primary reason for not using the bus, poor cleaning and maintenance over the last decade as well as the small bus size, jerky stop and starts, and high ridership on some lines has all combined to diminish the comfort of the bus system. Lack of comfort is a topic that spreads across many AAAQ factors but was hardly referenced as important within the different levels of policy despite the emphasis on shifting modal share from cars towards PT. Policy is too focused on grandiose ideas of new systems rather than first solving the problems of the current system. As such, people prefer getting rides from friends or family, taking taxis, or biking when possible rather than using the existing PT system. Comfort is an especially important topic considering the ridership of the system being largely old people or those with limited mobility.

Satisfaction:

Building on the points made in the comfort section, people were generally unsatisfied with the public transportation system, but those who were unable to afford, unwilling to pay, or unprepared to ride private cars or taxis would still frequent the buses due to a lack of other choice. Therefore, JSP and the private operators of the system do not have much pressure to change, hypothetically. This is especially true because of the lack of discourse between the government and the citizens, meaning there is no municipal measure of satisfaction in the policy as it is.

The same is true of cycling infrastructure, such as with the safety dissatisfactions mentioned above. Additionally, one of the main conclusions of NoTochak's bicycle survey was that citizens are unsatisfied with the number of publicly available bike parks and the functionality of the existing parking lots. With little to no policy at any level defining survey of or engagement with citizens, general dissatisfaction and lack of hope will surely continue.

Security:

Investigate crime rates - bike theft, past stories about ethnic violence on PT, etc.

Bibliography

[1] H. Ritchie, P. Rosado, and M. Roser, "Breakdown of carbon dioxide, methane and nitrous oxide emissions by sector," *Our World Data*, Jan. 2024, Accessed: Jun. 11, 2024. [Online]. Available: https://ourworldindata.org/emissions-by-sector

[2] R. D. Reitz *et al.*, "IJER editorial: The future of the internal combustion engine," *Int. J. Engine Res.*, vol. 21, no. 1, pp. 3–10, Jan. 2020, doi: 10.1177/1468087419877990.

[3] H. Ritchie and M. Roser, "Cars, planes, trains: where do CO2 emissions from transport come from?," *Our World Data*, Mar. 2024, Accessed: Apr. 01, 2024. [Online]. Available: https://ourworldindata.org/co2-emissions-from-transport

[4] B. Lapillonne and E. Payan, "Energy efficiency trends in transport in the EU," *Enerdata*, Nov. 2023, [Online]. Available: https://www.enerdata.net/system/files/publications/energy-efficiency-transport-in-europe-2023.pdf

[5] U. Nations, "Generating power," United Nations. Accessed: Apr. 06, 2024. [Online]. Available: https://www.un.org/en/climatechange/climate-solutions/cities-pollution

[6] "Urban and rural living in the EU." Accessed: Apr. 05, 2024. [Online]. Available: https://ec.europa.eu/eurostat/web/products-eurostat-news/-/edn-20200207-1

[7] "The European Green Deal - European Commission." Accessed: May 21, 2024. [Online]. Available: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

[8] "European Pillar of Social Rights - Building a fairer and more inclusive European Union." Accessed: May 21, 2024. [Online]. Available: https://ec.europa.eu/social/main.jsp?catId=1226&langId=en

[9] P. O. of the E. Union, "COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS The New EU Urban Mobility Framework, COM/2021/811 final," Publications Office of the EU. Accessed: Jan. 23, 2024. [Online]. Available: https://op.europa.eu/en/publication-detail/-/publication/ad816b47-8451-11ec-8c40-01aa75ed71a1

[10] P. R. Shukla, J. Skea, and R. Slade, "Working Group III Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change".

[11] S. Hughes, "Principles, drivers, and policy tools for just climate change adaptation in legacy cities," *Environ. Sci. Policy*, vol. 111, pp. 35–41, Sep. 2020, doi: 10.1016/j.envsci.2020.05.007.

[12] E. Chu, I. Anguelovski, and J. Carmin, "Inclusive approaches to urban climate adaptation planning and implementation in the Global South," *Clim. Policy*, vol. 16, no. 3, pp. 372–392, Apr. 2016, doi: 10.1080/14693062.2015.1019822.

[13] F. Berger and N. Mischkowski, "Reaping the benefits of human-centric urban planning," *Mult. Impacts Calc. Tool*, Jan. 2024.

[14] "Technical dialogue of the first global stocktake: Synthesis report by the co-facilitators on the technical dialogue." UNFCCC, Sep. 2023. [Online]. Available: https://unfccc.int/sites/default/files/resource/sb2023_09_adv.pdf

[15] A. Biehl and A. Stathopoulos, "Investigating the interconnectedness of active

transportation and public transit usage as a primer for Mobility-as-a-Service adoption and deployment," *J. Transp. Health*, vol. 18, p. 100897, Sep. 2020, doi: 10.1016/j.jth.2020.100897.
[16] A. Ferdman, "Well-being and mobility: A new perspective," *Transp. Res. Part Policy Pract.*, vol. 146, pp. 44–55, Apr. 2021, doi: 10.1016/j.tra.2021.02.003.
[17] M. Vujcic, J. Tomicevic-Dubljevic, I. Zivojinovic, and O. Toskovic, "Connection between urban green areas and visitors' physical and mental well-being," *Urban For. Urban Green.*, vol. 40, pp. 299–307, Apr. 2019, doi: 10.1016/j.ufug.2018.01.028.
[18] R. G. Innes, "An evaluation framework for citizen participation in urban transportation planning," University of British Columbia, 1988. doi: 10.14288/1.0097831.
[19] X. Sanyer Matias and L. Alegre Valls, "Citizen-Centered Mobility Model of Catalonia," in *Towards User-Centric Transport in Europe 3: Making Digital Mobility Inclusive and Accessible*, I. Keseru and A. Randhahn, Eds., Cham: Springer International Publishing, 2023, pp. 42–55. doi: 10.1007/978-3-031-26155-8_3.
[20] L. C. Walters, J. Aydelotte, and J. Miller, "Putting More Public in Policy Analysis," in *The Age of Direct Citizen Participation*, Routledge, 2008.
[21] T. Tuvikene, "Strategies for Comparative Urbanism: Post-socialism as a De-territorialized Concept," *Int. J. Urban Reg. Res.*, vol. 40, no. 1, pp. 132–146, 2016, doi: 10.1111/1468-2427.12333.
[22] N. C. Nagorny-Koring and T. Nochta, "Managing urban transitions in theory and practice - The case of the Pioneer Cities and Transition Cities projects," *J. Clean. Prod.*, vol. 175, pp. 60–69, Feb. 2018, doi: 10.1016/j.jclepro.2017.11.072.
[23] "Capitalism, socialism, and urban transportation. - EBSCO." Accessed: Feb. 23, 2024. [Online]. Available: https://research.ebsco.com/c/3czfwv/viewer/html/kwuaz3rbxz
[24] "Understanding Capital Volume II - Chapter 6." Accessed: Mar. 15, 2024. [Online]. Available: https://www.marxists.org/subject/economy/authors/fox/ucv2-ch06.htm
[25] M. Emanuel, F. Schipper, and R. Oldenziel, Eds., *A U-Turn to the Future; Sustainable Urban Mobility since 1850*. Berghahn Books, 2020.
[26] J. Malý, P. Dvořák, and P. Šuška, "Multiple transformations of post-socialist cities: Multiple outcomes?," *Cities*, vol. 107, p. 102901, Dec. 2020, doi: 10.1016/j.cities.2020.102901.
[27] "Inequities persist in air pollution exposure across European Union cities | State of Global Air." Accessed: Jun. 02, 2024. [Online]. Available: https://www.stateofglobalair.org/news-events/inequities-persist-air-pollution-exposure-across-european-union-cities
[28] M. B. Collins, I. Munoz, and J. JaJa, "Linking 'toxic outliers' to environmental justice communities," *Environ. Res. Lett.*, vol. 11, no. 1, p. 015004, Jan. 2016, doi: 10.1088/1748-9326/11/1/015004.
[29] F. Rangel, "Conflicting Visions of Socialism: Tito-Stalin Split," *Zeitgeist J. Polit. Hist. Philosphy*, vol. 2022, no. 1, May 2022, [Online]. Available: https://digitalcommons.imsa.edu/zeitgeist/vol2022/iss1/1
[30] "Human Rights Watch World Report 1990 - Yugoslavia," Refworld. Accessed: Apr. 25, 2024. [Online]. Available: https://www.refworld.org/reference/annualreport/hrw/1991/en/92483
[31] O. Havrylyshyn, "Fifteen Years of Transformation in the Post-Communist World: Rapid Reformers Outperformed Gradualists," *SSRN Electron. J.*, 2007, doi:

10.2139/ssrn.1066807.
[32] P. Jones, V. Holve, C. Cavoli, R. Gerike, and C. Halpern, “CREATE Policy Recommendations,” *CREATE*, May 2018, [Online]. Available: https://create-mobility.eu/PUBLICATIONS/DELIVERABLES/CREATE_D75-AcityIntroductiontoCREATE.pdf
[33] T. Tuvikene, “Post-socialist (auto)mobilities: Modernity, freedom and citizenship,” *Geogr. Compass*, vol. 12, no. 3, p. e12362, 2018, doi: 10.1111/gec3.12362.
[34] R. Cowell and J. Murdoch, “Land Use and the Limits to (Regional) Governance: Some Lessons from Planning for Housing and Minerals in England,” *Int. J. Urban Reg. Res.*, vol. 23, no. 4, pp. 654–669, 1999, doi: 10.1111/1468-2427.00221.
[35] M. Betsill and Bulkeley, “Cities and the Multilevel Governance of Global Climate Change.” Accessed: Jan. 23, 2024. [Online]. Available: https://www-1jstor-1org-10098f9ws0ed7.erf.sbb.spk-berlin.de/stable/27800607
[36] G. Marks, “Structural Policy in the European Community,” in *Euro-Politics: Institutions and Policymaking in the “New” European Community*, A. Sbragia, Ed., The Brookings Institution, 1992, pp. 191–224. [Online]. Available: https://garymarks.web.unc.edu/wp-content/uploads/sites/13018/2016/09/marks-Structural-Policy-in-the-European-Community.pdf
[37] P. Cairney, T. Heikkila, and M. Wood, “Making Policy in a Complex World,” *Elem. Public Policy*, Feb. 2019, doi: 10.1017/9781108679053.
[38] H. Liesbet and M. Gary, “Unraveling the Central State, but How? Types of Multi-level Governance,” *Am. Polit. Sci. Rev.*, vol. 97, no. 02, May 2003, doi: 10.1017/S0003055403000649.
[39] “EUR-Lex - 12002E002 - EN,” Official Journal C 325 , 24/12/2002 P. 0040 - 0040; Official Journal C 340 , 10/11/1997 P. 0181 - Consolidated version; Official Journal C 224 , 31/08/1992 P. 0008 - Consolidated version; (EEC Treaty - no official publication available); Accessed: Mar. 06, 2024. [Online]. Available: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX%3A12002E002
[40] S. M. Lipset, “Some Social Requisites of Democracy: Economic Development and Political Legitimacy,” *Am. Polit. Sci. Rev.*, vol. 53, no. 1, pp. 69–105, Mar. 1959, doi: 10.2307/1951731.
[41] D. Acemoglu and J. Robinson, “Non-Modernization: Power–Culture Trajectories and the Dynamics of Political Institutions,” *Annu. Rev. Polit. Sci.*, vol. 25, no. 1, pp. 323–339, 2022, doi: 10.1146/annurev-polisci-051120-103913.
[42] C. Radaelli and R. Pasquier, “Encounters with Europe: concepts, definitions, and research design,” *Politik*, 2006, [Online]. Available: https://ore.exeter.ac.uk/repository/handle/10036/24315
[43] T. Börzel and T. Risse, “Conceptualizing the Domestic Impact of Europe,” in *The Politics of Europeanization*, K. Featherstone and C. Radaelli, Eds., 2003. [Online]. Available: https://academic.oup.com/book/7757
[44] C. Heckman and S. Rastogi, “Availability, Accessibility, Acceptability, and Quality framework: As tool to identify potential barriers to accessing services in humanitarian settings.” UNICEF, Nov. 2019. [Online]. Available: https://gbvguidelines.org/wp/wp-content/uploads/2019/11/AAAQ-framework-Nov-2019-WEB.pdf
[45] “The AAAQ toolbox | The Danish Institute for Human Rights.” Accessed: Feb. 07, 2024.

[Online]. Available: https://www.humanrights.dk/projects/aaaq-toolbox
[46] M. Kiss, “Understanding transport poverty,” *Eur. Parliam. Res. Serv.*, Oct. 2022, [Online]. Available: https://www.europarl.europa.eu/RegData/etudes/ATAG/2022/738181/EPRS_ATA(2022)738181_EN.pdf
[47] K. Lucas, G. Mattioli, E. Verlinghieri, and A. Guzman, “Transport poverty and its adverse social consequences,” *Proc. Inst. Civ. Eng. - Transp.*, vol. 169, no. 6, pp. 353–365, Dec. 2016, doi: 10.1680/jtran.15.00073.
[48] *Regulation (EU) 2023/955 of the European Parliament and of the Council of 10 May 2023 establishing a Social Climate Fund and amending Regulation (EU) 2021/1060*, vol. 130. 2023. Accessed: Apr. 20, 2024. [Online]. Available: http://data.europa.eu/eli/reg/2023/955/oj/eng
[49] A. Hastings, “Discourse and Urban Change: Introduction to the Special Issue,” *Sage Publ.*, vol. 36, no. 1, pp. 7–12, Jan. 1999, Accessed: Jan. 24, 2024. [Online]. Available: https://www-1jstor-1org-10098f9gg1314.erf.sbb.spk-berlin.de/stable/43084365
[50] L. J. Brinton, “Historical Discourse Analysis,” in *The Handbook of Discourse Analysis*, John Wiley & Sons, Ltd, 2015, pp. 222–243. doi: 10.1002/9781118584194.ch10.
[51] R. Wodak, “Critical Discourse Analysis, Discourse-Historical Approach,” 2015, p. 14pp. doi: 10.4135/9780857028020.d6.
[52] S. Tenny, J. M. Brannan, and G. D. Brannan, “Qualitative Study,” *StatPearls Publ.*, Dec. 2017, Accessed: Mar. 08, 2024. [Online]. Available: https://www.ncbi.nlm.nih.gov/books/NBK470395
[53] “Sustainable Urban Mobility Indicators.” World Business Council for Sustainable Development, Dec. 2015. [Online]. Available: https://docs.wbcsd.org/2015/12/SMP2.0_Sustainable-Mobility-Indicators_ENG.pdf
[54] “Technical support related to sustainable urban mobility indicators (SUMI)”, [Online]. Available: https://transport.ec.europa.eu/system/files/2020-09/sumi_wp1_harmonisation_guidelines.pdf
[55] “History,” Balti jaam. Accessed: Mar. 15, 2024. [Online]. Available: https://baltijaam.ee/en/ajalugu/
[56] V. Haas, “A Review of Urban Planning in Tallinn, Estonia:,” Aug. 2006, [Online]. Available: https://deepblue.lib.umich.edu/bitstream/handle/2027.42/41228/VaikeHaasMLAThesis.pdf?sequence=2
[57] “History of tram transport,” Aktsiaselts Tallinna Linnatransport (TLT). Accessed: Feb. 27, 2024. [Online]. Available: https://www.tlt.ee/en/about-us/vehicle-fleet-and-history/trams/history-of-tram-transport/
[58] K. Hallas-Murula, “Diffusion of European Modern City Planning around 1910: Transferring and Implementation of International Knowledge in Tallinn, Estonia,” *J. Urban Hist.*, vol. 43, no. 4, pp. 615–624, Jul. 2017, doi: 10.1177/0096144217705345.
[59] D. J. Smith, *The Baltic States: Estonia, Latvia and Lithuania*. Psychology Press, 2002.
[60] N. Hope, “Interwar Statehood: Symbol and Reality,” in *The Baltic States: The National Self-Determination of Estonia, Latvia and Lithuania*, G. Smith, Ed., London: Palgrave Macmillan UK, 1996, pp. 41–68. doi: 10.1007/978-1-349-14150-0_3.
[61] “Wayback Machine.” Accessed: Feb. 28, 2024. [Online]. Available:

https://web.archive.org/web/20070609152524/http://www.muinas.ee/vvfiles/0/Places%20of%20Arrsistakorreng.pdf
[62] R. Pullat, *All roads lead to Tallinn: history of Old Tallinn*. Estopol, 1998.
[63] V. Salo, Estland, and Eesti, Eds., *The white book: losses inflicted on the Estonian nation by occupation regimes ; 1940 - 1991*. Tallinn: Estonian Encyclopaedia Publishers, 2005.
[64] F. Hill and C. G. Gaddy, *The Siberian Curse: How Communist Planners Left Russia Out in the Cold*. Blue Ridge Summit, UNITED STATES: Brookings Institution Press, 2003. Accessed: Mar. 16, 2024. [Online]. Available: http://ebookcentral.proquest.com/lib/ucb/detail.action?docID=273527
[65] D. B. Hess and P. Metspalu, "Architectural Transcendence in Soviet-Era Housing: Evidence from Socialist Residential Districts in Tallinn, Estonia," in *Housing Estates in the Baltic Countries: The Legacy of Central Planning in Estonia, Latvia and Lithuania*, D. B. Hess and T. Tammaru, Eds., in The Urban Book Series. , Cham: Springer International Publishing, 2019, pp. 139–160. doi: 10.1007/978-3-030-23392-1_7.
[66] "Postimees: Uued trammiliinid ootavad linnajuhtide liisu langemist," archive.ph. Accessed: Feb. 27, 2024. [Online]. Available: https://archive.ph/BnjAg
[67] D. B. Hess, "Transport in Mikrorayons: Accessibility and Proximity to Centrally Planned Residential Districts during the Socialist Era, 1957–1989," *J. Plan. Hist.*, vol. 17, no. 3, pp. 184–204, Aug. 2018, doi: 10.1177/1538513217707082.
[68] A. Lust, "Broken rails: the privatisation of Estonian railways," *Post-Communist Econ.*, vol. 29, no. 1, pp. 71–89, Jan. 2017, doi: 10.1080/14631377.2016.1237041.
[69] C. Cavoli, "CREATE - Tallinn, Estonia City Report: Past, Present and Future mobility challenges and opportunities in Tallinn," *UCL Cent. Transp. Stud.*, Aug. 2017, [Online]. Available: https://create-mobility.eu/PUBLICATIONS/REPORTS/CITY_REPORT_Tallinn_21_12_2017.pdf
[70] R. Weber and T. Gunther, "Estonia Moves Toward EU Accession," *Int. Monet. Fund Econ. Transit.*, September 20000, [Online]. Available: file:///C:/Users/aston/Downloads/022-article-A008-en.pdf
[71] "Chapters of the acquis - European Commission." Accessed: Apr. 15, 2024. [Online]. Available: https://neighbourhood-enlargement.ec.europa.eu/enlargement-policy/conditions-membership/chapters-acquis_en
[72] "Commission Opinion on Estonia's Application for Membership of the European Union." Jul. 15, 1997. [Online]. Available: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX%3A51997DC2006&from=BG#page=25.11
[73] "COMMON TRANSPORT POLICY ACTION PROGRAMME 1995-2000," European Commission - European Commission. Accessed: Apr. 15, 2024. [Online]. Available: https://ec.europa.eu/commission/presscorner/detail/en/IP_95_743
[74] "Inforegio - Growing together: EU support to Estonia that joined in 2004." Accessed: Apr. 15, 2024. [Online]. Available: https://ec.europa.eu/regional_policy/en/information/publications/factsheets/2019/growing-together-eu-support-to-estonia-that-joined-in-2004
[75] "Final Publishable Report - Towards a sustainable transport system in Malmö, Norwich, Potenza, Suceava and Tallinn | CIVITAS." Accessed: Apr. 15, 2024. [Online]. Available:

https://civitas.eu/resources/final-publishable-report-towards-a-sustainable-transport-system-in-malmo-norwich-potenza
[76] “Softening the image of public transport,” Interactions.ie. Accessed: Jun. 13, 2024. [Online]. Available: https://interactions.ie/2013/11/04/softening-the-image-of-public-transport/
[77] “CIVITAS MIMOSA- INNOVATIVE CITIES BEFORE AND AFTER CIVITAS | CIVITAS.” Accessed: Apr. 15, 2024. [Online]. Available: https://civitas.eu/resources/civitas-mimosa-innovative-cities-before-and-after-civitas
[78] “Trans-European Transport Network (TEN-T) - European Commission.” Accessed: Apr. 16, 2024. [Online]. Available: https://transport.ec.europa.eu/transport-themes/infrastructure-and-investment/trans-european-transport-network-ten-t_en
[79] “INTERVJUU ⟩ Soome minister: Tallinna ja Helsingi vaheline tunnel on ebarealistlik,” Maailm. Accessed: Apr. 16, 2024. [Online]. Available: https://maailm.postimees.ee/7956112/intervjuu-soome-minister-tallinna-ja-helsingi-vaheline-tunnel-on-ebarealistlik
[80] M. Dijk, J. de Haes, and C. Montalvo, “Park-and-Ride motivations and air quality norms in Europe,” *J. Transp. Geogr.*, vol. 30, pp. 149–160, Jun. 2013, doi: 10.1016/j.jtrangeo.2013.04.008.
[81] “Мэрия Таллина отменила плату за общественный транспорт,” Lenta.RU. Accessed: Apr. 16, 2024. [Online]. Available: https://lenta.ru/news/2012/08/22/free/
[82] “Public transport card system – The Green Card | Tallinn.” Accessed: Apr. 20, 2024. [Online]. Available: https://www.tallinn.ee/en/tallinnovatsioon/public-transport-card-system-green-card
[83] E. Schulze, “How a tiny country bordering Russia became one of the most tech-savvy societies in the world,” CNBC. Accessed: Apr. 20, 2024. [Online]. Available: https://www.cnbc.com/2019/02/08/how-estonia-became-a-digital-society.html
[84] “Seamless Passenger Mobility - e-Estonia.” Accessed: Apr. 20, 2024. [Online]. Available: https://e-estonia.com/solutions/smart-city-and-mobility/border-queue-management/
[85] “SPINE | CIVITAS.” Accessed: Apr. 20, 2024. [Online]. Available: https://civitas.eu/projects/spine#facts
[86] “Sustainable and Smart Mobility Strategy – putting European transport on track for the future.” Dec. 09, 2020. [Online]. Available: https://eur-lex.europa.eu/resource.html?uri=cellar:5e601657-3b06-11eb-b27b-01aa75ed71a1.0001.02/DOC_1&format=PDF
[87] “Transport and Mobility Development Plan 2021-2035.” Estonian Ministry of Economic Affairs and Communications, 2021. [Online]. Available: https://kliimaministeerium.ee/sites/default/files/documents/2023-09/Transpordi%20ja%20liikuvuse%20arengukava%202021-2035_EN%20%281%29.pdf
[88] “TALLINNA JÄTKUSUUTLIKU LINNALIIKUVUSE KAVA.” Nov. 2023. [Online]. Available: https://www.tallinn.ee/et/media/525704
[89] “Tallinn 2035 Development Strategy,” 2020, [Online]. Available: https://www.tallinn.ee/en/media/313030
[90] “Proposing a European Declaration on Cycling.” Oct. 2023. [Online]. Available: https://transport.ec.europa.eu/document/download/60033b3b-0652-495c-add3-ffea2388ff81_en?filename=European_Declaration_on_Cycling_text.pdf

[91] J. V. | ERR, “Cycle lanes set for Tallinn’s Peterburi tee and Lastekodu tänav this year,” ERR. Accessed: May 29, 2024. [Online]. Available: https://news.err.ee/1609278489/cycle-lanes-set-for-tallinn-s-peterburi-tee-and-lastekodu-tanav-this-year
[92] “Tallinn launches e-scooter parking pilot,” Smart Cities World. Accessed: Jun. 06, 2024. [Online]. Available: https://www.smartcitiesworld.net/micromobility/tallinn-launches-e-scooter-parking-pilot-9252
[93] E. N. | ERR, “Tallinn to expand electric scooter parking areas next year,” ERR. Accessed: Jun. 06, 2024. [Online]. Available: https://news.err.ee/1609178473/tallinn-to-expand-electric-scooter-parking-areas-next-year
[94] A. Urb, “Tallinn 2023 Annual Publication,” *2023*, [Online]. Available: https://live.s3.teliahybridcloud.com/s3fs-public/inline-files/Tallinn_2023_annual_publication_web.pdf
[95] E. N. | ERR, “Mustamäe district of Tallinn gets self-driving bus,” ERR. Accessed: Jun. 13, 2024. [Online]. Available: https://news.err.ee/1608658279/mustamae-district-of-tallinn-gets-self-driving-bus
[96] “Number of road accident casualties continues to rise | Transpordiamet.” Accessed: May 30, 2024. [Online]. Available: https://www.transpordiamet.ee/en/news/number-road-accident-casualties-continues-rise
[97] M. Kovacevic, “150 Years of Macedonian Railways,” Transport Community. Accessed: Feb. 27, 2024. [Online]. Available: https://www.transport-community.org/news/150-year-of-macedonian-railways/
[98] М. Дамческа, “There was hope for Skopje - Free Press,” Слободен печат. Accessed: Feb. 27, 2024. [Online]. Available: https://www.slobodenpecat.mk/en/imalo-nadezh-za-skopje/
[99] M. Lazarevska and B. Markoski, “CHRONOLOGY OF THE URBAN EXPANSION OF SKOPJE,” *Acta Geobalcanica*, vol. 5, pp. 57–73, Jan. 2019, doi: 10.18509/AGB.2019.08.
[100] O. Marina and D. Pencic, “URBAN TRANSFORMATIONS OF SKOPJE FRAGMENTED CITY – LEGACY OF HISTORY”.
[101] S. Bouzarovski, “Skopje,” *Cities*, vol. 28, no. 3, pp. 265–277, Jun. 2011, doi: 10.1016/j.cities.2010.05.002.
[102] “Spirit of the Routemaster lives on in the heart of Macedonia,” Evening Standard. Accessed: Feb. 27, 2024. [Online]. Available: https://www.standard.co.uk/hp/front/spirit-of-the-routemaster-lives-on-in-the-heart-of-macedonia-6532938.html
[103] I. Kukobat, “Počeci vazdušnog saobraćaja u posleratnoj Jugoslaviji 1945-1947.,” *Istor. 20 Veka*, vol. 38, no. 2/2020, pp. 173–186, Aug. 2020, doi: 10.29362/ist20veka.2020.2.kuk.173-186.
[104] T. Petrovski, “Damaging Effects of July 26, 1963 Skopje Earthquake,” *MESF Cyber J. Geosci.*, vol. 2, Jan. 2004.
[105] R. Home, “Reconstructing Skopje, Macedonia after the 1963 earthquake: The Master Plan forty years on,” *Pap. Land Manag.*, vol. No. 7, 2007.
[106] А. Анастасовска, “Tram called fantasy - Free Press,” Слободен печат. Accessed: Feb. 27, 2024. [Online]. Available: https://www.slobodenpecat.mk/en/tramvaj-narechen-fantazija/
[107] C. Cavoli, “CREATE - Skope, Republic of Macedonia City Report: Past, Present and

Future mobility challenges and opportunities in Skopje," *UCL Cent. Transp. Stud.*, Oct. 2017, [Online]. Available: https://create-mobility.eu/PUBLICATIONS/REPORTS/CITY_REPORT_Skopje_21_12_2017.pdf
[108] J. Stefanovska and J. Koželj, "Urban planning and transitional development issues: The case of Skopje, Macedonia," *Urbani Izziv*, vol. 23, no. 1, pp. 91–100, 2012, Accessed: Mar. 22, 2024. [Online]. Available: https://www.jstor.org/stable/24920599
[109] V. Magleshov, "Skopje's Face-lift Starts Falling Apart," Balkan Insight. Accessed: Apr. 22, 2024. [Online]. Available: https://balkaninsight.com/2021/07/13/skopjes-face-lift-starts-falling-apart/
[110] A. Dimoski, "Investigation launched against former officials over 'Skopje 2014' monuments," Mia.mk. Accessed: Apr. 22, 2024. [Online]. Available: https://mia.mk/en/story/investigation-launched-against-former-officials-over-skopje-2014-monuments
[111] M. Risteska, "The Macedonian Accession to the European Union," 2007, [Online]. Available: https://d1wqtxts1xzle7.cloudfront.net/96848902/11871685-libre.pdf?1672910248=&response-content-disposition=inline%3B+filename%3DThe_Macedonian_Accession_to_the_European.pdf&Expires=1713804420&Signature=CSO7GzeN28OLhuRsNmq0aZzrzjUfq-DMBl6djkk7frWYzUoFKxDgwwYauaRBV0eMQ-91EMomzezNOVIVou~g1N3rmkcuLgQKAsFiHnP0L3jwJOuzHZEHuwiT9VX3UOZBpVHBhA5Z1lzuMa8rG2eqJDNpkr-8cgsRyCUi-7Ng~Ki2H48sbCOksoa7qCP6qLubu7KQfXlK3zAGBkkRCSp9rWrjUzOXy-gTDgs76pEiU~4STzZd2mCPTNmlJEyhAzSxy829pEKAynpskZriidVemgPo99YENP~AVcrAg~dA1Pc8FEXe5MowwKMBRg~h2sPOD5sVMxafrA5kCbb-wPGJdg__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA
[112] J. Jakimova, "End of the Line: North Macedonia's Railways Close to Hitting the Buffers," Balkan Insight. Accessed: Jun. 03, 2024. [Online]. Available: https://balkaninsight.com/2024/03/21/end-of-the-line-north-macedonias-railways-close-to-hitting-the-buffers/
[113] "RENAISSANCE | CIVITAS." Accessed: Apr. 22, 2024. [Online]. Available: https://civitas.eu/projects/renaissance
[114] "Transport Master Plan for Greater Skopje." Apr. 2011. [Online]. Available: https://skopje.gov.mk/media/5245/transportmasterplanforgreaterskopjeen.pdf
[115] A. Ruzin, "LESSONS AND STRATEGIES OF ECONOMIC LOBBYING IN THE EUROPEAN UNION," *Knowl. - Int. J.*, vol. 58, no. 1, Art. no. 1, Jun. 2023, doi: 10.35120/kij5801227r.
[116] *Treaty establishing the Transport Community*, vol. 278. 2017. Accessed: Apr. 23, 2024. [Online]. Available: http://data.europa.eu/eli/agree_internation/2017/1937/oj/eng
[117] "Connective Cities Local Project Workshop." GIZ, Dec. 13, 2017. [Online]. Available: https://www.connective-cities.net/fileStorage/Veranstaltungen/Lokaler_Projektworkshop_Skopje/Dokumente/EG_Brosch_skopje_web.pdf
[118] "Sustainable and Smart Mobility Strategy in the Western Balkans." Nov. 2023. [Online]. Available: https://www.transport-community.org/wp-content/uploads/2023/12/Sustainable-and-Smart-Mobility-Strategy-Report_designed.pdf
[119] "Draft National Transport Strategy." Dec. 2018. [Online]. Available:

http://www.mtc.gov.mk/media/files/2019/NTS-final%20EN.pdf
[120] “City of Skopje Sustainable Urban Mobility Plan.” CIVITAS, Sep. 2011. [Online]. Available: https://starportal.skopje.gov.mk/Uploads/SUMP%20Skopje%2014%2004%202013.pdf
[121] M. Koloski, “Centar is declared the most bike-friendly municipality in Skopje,” Skopje.IN. Accessed: Jun. 05, 2024. [Online]. Available: https://www.skopje.in/post/centar-is-declared-the-most-bike-friendly-municipality-in-skopje
[122] S. J. Marusic, “Macedonia Buys New Trains from China,” Balkan Insight. Accessed: May 31, 2024. [Online]. Available: https://balkaninsight.com/2014/06/25/macedonia-buys-new-trains-from-china/
[123] “The Park & Ride terminals for solving the parking issue in Skopje will wait for the new Master Plan.” Accessed: Jun. 13, 2024. [Online]. Available: https://meta.mk/en/the-park-ride-terminals-for-solving-the-parking-issue-in-skopje-will-wait-for-the-new-master-plan/
[124] I. Kolekevski, “Skopje City Council fails to adopt decision on subsidizing bus transport, public enterprise on strike,” Mia.mk. Accessed: May 31, 2024. [Online]. Available: https://mia.mk/en/story/skopje-city-council-fails-to-adopt-decision-on-subsidizing-bus-transport-public-enterprise-on-strike
[125] “Има решенија за скопскиот сообраќаен метеж – DW – 18.11.2013,” dw.com. Accessed: Jun. 13, 2024. [Online]. Available: https://www.dw.com/mk/%D0%B8%D0%BC%D0%B0-%D1%80%D0%B5%D1%88%D0%B5%D0%BD%D0%B8%D1%98%D0%B0-%D0%B7%D0%B0-%D1%81%D0%BA%D0%BE%D0%BF%D1%81%D0%BA%D0%B8%D0%BE%D1%82-%D1%81%D0%BE%D0%BE%D0%B1%D1%80%D0%B0%D1%9C%D0%B0%D0%B5%D0%BD-%D0%BC%D0%B5%D1%82%D0%B5%D0%B6/a-17233609
[126] “Europe’s most polluted capital Skopje offers free bus transport.” Accessed: Jun. 01, 2024. [Online]. Available: https://www.intellinews.com/europe-s-most-polluted-capital-skopje-offers-free-bus-transport-115334/
[127] “North Macedonia rail link to Bulgaria gets EU finance,” European Investment Bank. Accessed: Jun. 03, 2024. [Online]. Available: https://www.eib.org/en/stories/north-macedonia-rail-link-bulgaria-eu
[128] “Serbia and North Macedonia sign memorandum for high-speed railway,” RailTech.com. Accessed: Jun. 03, 2024. [Online]. Available: https://www.railtech.com/all/2023/11/24/memorandum-signed-for-new-belgrade-nis-skopje-high-speed-railway/
[129] ECF, “Cycling tourism: East Europe cycle route,” EuroVelo. Accessed: Jun. 06, 2024. [Online]. Available: https://en.eurovelo.com/ev11
[130] “Estonia to help North Macedonia in creating e-identity system.” Accessed: Jun. 06, 2024. [Online]. Available: https://www.baltictimes.com/estonia_to_help_north_macedonia_in_creating_e-identity_system/
[131] F. Dobruszkes, “An analysis of European low-cost airlines and their networks,” *J. Transp. Geogr.*, vol. 14, no. 4, pp. 249–264, Jul. 2006, doi: 10.1016/j.jtrangeo.2005.08.005.
[132] andero, “How Estonia is using digital twins to revolutionise construction, production and

even presentations," Invest in Estonia. Accessed: Jun. 07, 2024. [Online]. Available: https://investinestonia.com/how-estonia-is-using-digital-twins-to-revolutionise-construction-production-and-even-presentations/
[133] T. Tuvikene *et al.*, "Public transport as public space in European cities," *Leibniz-Inst. Für Länderkunde*, 2021, [Online]. Available: https://www.ssoar.info/ssoar/bitstream/handle/document/72914/ssoar-2021-tuvikene_et_al-Public_transport_as_public_space.pdf?sequence=1&lnkname=ssoar-2021-tuvikene_et_al-Public_transport_as_public_space.pdf
[134] "Create - Project deliverables." Accessed: Dec. 04, 2023. [Online]. Available: https://www.create-mobility.eu/
[135] "Cities | CIVITAS." Accessed: Mar. 08, 2024. [Online]. Available: https://civitas.eu/cities
[136] P. Torabian and H. Mair, "Insurgent citizens: mobility (in)justice and international travel," *J. Sustain. Tour.*, vol. 30, no. 2–3, pp. 392–407, Mar. 2022, doi: 10.1080/09669582.2021.1945069.
[137] "Directive - 2019/1936 - EN - EUR-Lex." Accessed: May 29, 2024. [Online]. Available: https://eur-lex.europa.eu/eli/dir/2019/1936/oj
[138] S. Veljanovski, "Skopje's BRT System: An Economic Perspective on Urban Transformation," Medium. Accessed: Jun. 03, 2024. [Online]. Available: https://medium.com/@sveljanovski/skopjes-brt-system-an-economic-perspective-on-urban-transformation-40d91ae87688
[139] А. Стојковска, "Arsovska in a new attempt to purchase buses, even though the Council rejected it 'hundreds of times' - Sloboden Pechat," Слободен печат. Accessed: May 31, 2024. [Online]. Available: https://www.slobodenpecat.mk/en/arsovska-vo-nov-obid-da-nabavuva-avtobusi-iako-sovetot-stopati-ja-odbi/
[140] B. Petreski, "Diagnostics of municipal labor markets in North Macedonia," Mar. 2021.