Master Thesis

DRIVING CHANGE: A CASE STUDY ON THE ROLE OF POLICY ADOPTION & TRANSFER IN ACHIEVING SUSTAINABLE MOBILITY TARGETS FROM THE GREEN DEAL

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MASTER THESIS

Abstract

This study examines the extent to which European cities of different population sizes use the mechanisms of policy transfer to adopt and diffuse mobility policies. In 2019, the European Commission presented the Green Deal in which the European continent should be climate neutral by 2050. For many sectors, this means a complex intervention to become greener. Especially for the mobility sector, as this sector is responsible for a quarter of the total greenhouse gas emissions in the European Union. For this purpose, two variables were developed: material (internal) and social & political factors (external). The Sustainable Urban Mobility Plans were examined for the six selected cities in this thesis using Atlas.ti. The study found that European cities have enough drivers to initiate the transition to sustainable mobility. However, material factors are crucial in this, mainly financial resources. Due to the prohibitive cost of the desired transition, municipalities need to be creative in their budgets to set and keep investments in green mobility high. Furthermore, European cities frequently use the mechanism of policy learning, looking at other countries and/or cities to apply successful mobility policies there in their cities.

Keywords

Adoption - Diffusion - European Union - Green Deal - Policy Transfer - Sustainable Mobility - SUMP

Table of Contents

List of Abbreviations

AA	Appropriate Assessment
CJEU	Court of Justice of the European Union
EC	European Commission
ECA	European Court of Auditors
ECB	European Central Bank
EP	European Parliament
EU	European Union
GD	Green Deal
GDP	Gross Domestic Product
H1 & H2	Hypothesis 1 and Hypothesis 2
ICLEI	Local Governments for Sustainability
MS	Member States
N	Number of Cases
SEA	Strategic Environmental Assessment
SUMP	Sustainable Urban Mobility Plan
SWOT	Strengths, Weaknesses, Opportunities, and Threats
US	United States

I Introduction

‘’Man is a product of nearly three billion years of evolution, in whose person the evolutionary process has at last become conscious of itself and its possibilities. Whether he likes it or not, he is responsible for the whole further evolution of our planet’’ (Sir Julian Huxley, 1964) and "Going green means you have made the conscious decision to not steal from your children" are two quotes that show the essence of who is responsible for the transition to a greener planet: humanity. In this respect, the first quote is from Sir Julian Huxley, a prominent British biologist and writer. The second quote comes from today's society as also published by the Greenovator Foundation (2020), where the responsibility of climate transitions is approaching with an increasingly individualistic approach.

This thesis examines ‘’sustainable mobility policy’’ in European cities. According to Britannica, sustainability is " the long-term viability of a community, set of social institutions, or societal practice." The essence is that sustainability serves as an ethic where future generations have opportunities to live under similar levels of prosperity (Meadowcroft, 2022). While the other part of this concept is "mobility", Cambridge describes it as "the ability to move freely or be easily moved" (Cambridge Dictionary, 2022). From this, sustainable mobility is a form of moving where no harm is done to current or future generations. The welfare of future generations should not be affected when people move, and this damages the lives of future generations relative to the present generation. Otherwise, it should not be given the term "sustainable". Sustainable mobility is one of the spearheads emerging from the Green Deal drafted by the European Commission (EC). With the Green Deal, the Europe Commission seeks to make the European Continent climate neutral by 2050 (European Commission, 2019).

The urgency for a transition on the European continent has come much closer for the people of Europe since February 2022 and is felt in this regard. Russia's invasion of Ukraine is causing global geopolitical tensions, with Europe realising that its dependence on Russia was too vital and that a transition in the energy field is imperative (Zakeri et al., 2022). Domestic transport and international air and sea traffic account for 26% of greenhouse gas emissions in the European Union (EU) (European Environment Agency, 2022). This high number means there is much progress to book in this area, making studying the subject more challenging. This study focuses on European cities because cities ultimately have to implement mobility policies in their areas. The associated climate goals are broken down from higher up.

However, the social impact on people's lives is significant; a transition in mobility transport affects every civilian. Tackling climate change and the possible associated measures does not always achieve societal approval and acceptance. Climate change policy may pit individuals against collective interest. Citizens are individually affected in their daily behaviour, both financially and socially. For residents, the monetary impact could have been that citizens have to pay more for less sustainable mobility choices. Driving a polluting fuel car may be burdened with taxes by the government. From a social point of view, citizens may have to travel in new ways. From this, the fastest mode of transport cannot be taken, necessitating extra efforts with longer travel time to reach the destination and reducing time for other

activities. However, sustainable mobility also brings opportunities to make transport more efficient and gain time. Changing people's environment directly with no visible results instantly creates resistance as a primary reaction (Kiviluoto et al., 2022). Involving and informing citizens in the decision-making of far-reaching climate policies should ensure greater social understanding and acceptance (Wamsler et al., 2022). In short, people's behaviour must change for a successful transition towards sustainable mobility. Pointing out people's usage and the profits generated by making other choices creates more awareness. When the choice needs to be made between a means of transport and the human brain sees the convenient quickest choice to travel in the most carbon-neutral way, the brain is nonetheless triggered.

Three keywords for transit in sustainable mobility are important: avoid, shift, and improve. These keywords emerge from research by Remme et al., (2022) looking at how citizens can be influenced in their transport choices. Subsidising electric cars, which should increase sales, could improve car use. In effect, greenhouse gas emissions decrease when people are more likely to take an electric car rather than one that runs on fossil fuel. Another example is avoiding the car by shifting the mode of transport to public transport and/or cycling. Investment in public transport and infrastructure should then provide these movements. Moreover, that a society's behaviour is adaptable regarding mobility, was shown in Germany in the summer of 2022. The German government introduced the 9-euro ticket in the country. Train travellers could use German unlimited regional trains for nine euros per month in June, July, and August. Besides overcrowded trains, the German government's policy measure saved millions of tons of CO2 emissions and reduced car trip usage by 10% (Balgaranov, 2022). As these examples show, plenty of opportunities exist to increase policy commitment to sustainable mobility. Each demographic region is developing their approach, which creates an opportunity to meet the climate ambitions of these different regions through policy transfer.

"Policy Transfer" is an essential key concept for this thesis. Policy transfer can be defined as: "the process of using knowledge about policy in one context to develop policy in another context" (Macmillan Dictionary, 2021). The policy of city A can be used for the city in country B to improve and/or learn.

1.1 Relevance Research & Research Question

This thesis focuses on the transition of sustainable mobility in the EU towards the ultimate goal of a climate-neutral continent by 2050. This thesis demonstrates the extent to which governments at the urban level are working on the transition to more sustainable mobility (Kaviani Rad et al., 2022). The topic of climate change is an eminent concern for society in any manner. Thus, Holmberg & Rothstein (2015) state that citizens' quality of life and prosperity depends on the quality of government institutions. This means a poorly functioning government must observe the citizens' care task. This occurrence was also seen in the case of the non-profit organisation Urgenda, which filed several lawsuits against the Dutch government regarding its duty of care to its citizens (Nollkaemper & Burgers, 2020). The consequences of the government's failure to act on the climate crisis are affecting the welfare of its

citizens. Quality of life is affected to the extent that the government has no choice not to intervene policy-wise.

Specifically, six European cities (Dublin, Eindhoven, Ghent, Lisbon, Prague, and Stockholm) are taken as cases here; by comparing these cities, this thesis demonstrates the actors that enable the transition towards sustainable urban mobility. These cities are chosen based on population size because they can be divided into three pairs of two cities. Cities around and above a million inhabitants: Prague and Stockholm, cities around and above half a million inhabitants: Dublin and Lisbon; and cities around and above 250,000 inhabitants: Eindhoven and Ghent. Choosing cities with different population numbers should produce a more varied picture of the research results. Therefore, this paper aims to answer the following research question:

''Against the backdrop of the European Union's Green Deal, to what extent do policy adoption and policy transfer explain urban sustainable mobility policy measures in the EU?''

Answering this research question has high societal relevance because cities are responsible for combating climate change. The fact that individual states and cities should also focus on mobility is apparent as this group scores high in the share of greenhouse gas emissions. Cities must therefore become smarter and design their urban areas for sustainable mobility. New technologies can help implement mobility solutions (Richter et al., 2022). However, financial shortcomings are a severe threat to many city networks. If the problem were simple to solve, it would have been addressed already. Incorporating knowledge and learning from other cities is a bidding solution.

This study provides more information on how European cities in the EU are trying to tackle the climate crisis in the field of sustainable mobility. From the scientific point of view, this thesis offers relevance on the extent to which cities exchange information with each other and use it to initiate the transition to sustainable mobility (policy transfer). Consequently, the study's results provide better insight into how cities can learn from each other in the transition toward sustainable mobility. Also, it should indicate the urgency of the situation within certain cities regarding whether or not set targets are met. These defined goals can be set by cities themselves in mobility plans or goals set by the European Green Deal. Essential knowledge gathered in this study is needed to tackle the escalation of the climate crisis. Because of this, the choice is made to focus on six different cities in the EU with varying populations. This choice should provide a more varied study perspective, leading to a better conclusion (Oviedo et al., 2022).

Sub-Questions & Hypotheses

The research question will be tackled by examining six EU cities' policy documents between 2010 and 2022. This overarching research question is further decomposed into two sub-questions (SQ) and two hypotheses. The stated hypotheses refer to internal factors (policy adoption): material resources and external factors (policy transfer): social and political factors.

The first sub-question focuses on material factors in adopting sustainable mobility policies. The three factors central to this from the literature are: capacity, motivation, and barriers. This study does not consider the motivation factor, as the Green Deal is assumed to motivate these EU cities. In terms of both capacity and overcoming obstacles, one factor is crucial: finances. When cities have more financial resources, the assumption can be made that more is also invested in mobility policy (Minkman et al., 2018). Research from Bardal et al., (2020) shows that when cities have more financial resources, the assumption can be made that there is more focus on investment in sustainable mobility. This results in the following first sub-question with the corresponding hypothesis:

SQ 1 What material resources lead to adoption of sustainable mobility policy?

H1 European cities have a greater adoption of sustainable mobility policies when more material resources are available.

For the second sub-question, the focus shifts to the influence of external factors, namely the social and political factors, on the policy transfer of sustainable mobility policies. The four mechanisms that emerge here are: coercion, competition, copying, and learning (Shipan & Volden, 2012). Those mechanisms are regarded as the key factors when using policy transfer. Political backing also factors in; cities are less likely to accelerate significant interventions such as the transition to sustainable mobility without political backing. Here, the question is to what extent these five factors influence decision-making for sustainable mobility policies (Neidig et al., 2022). From these mechanisms, the second sub-question, including the hypothesis, is drawn up:

SQ 2 What social and political factors lead to policy transfer of sustainable mobility policy?

H2 Social and political factors are positively associated with greater use of policy transfer in sustainable mobility policy.

The initiative and goal of writing and underwriting the Green Deal are to increase sustainability and the well-being of citizens in the EU and globally, to realise the insights of climate change and the catastrophic consequences it can bring. In 2019, the Green Deal was adopted with the policy plan to transform Europe into a climate-neutral continent by 2050. In short, these goals mean making minimum investments of 260 billion euros within Europe through 2030. These staggeringly high investments would amount to 1.94% of the EU's Gross Domestic Product in 2020. 2030 also counts for the EC as an interim evaluation in which set targets are measured. One of the aims to be achieved by 2030 is to reduce greenhouse gas emissions by 55% compared to 1990. The share of renewable energy must also reach 32% by 2030 (Filipović et al., 2022). The question that arises from this is how to spend the minimum investment of 260 billion euros wisely by the EC. The outcome of H1 as H2 is different regarding the financial approach to this investment.

Suppose it is valid for cities that more material resources (internal factors) lead to higher adoption and diffusion of sustainable mobility policies (H1). In that case, this indicates that the EU will have to support more cities to make these material resources available so the cities can pass the needed threshold for the transition towards sustainable mobility. This policy change will ultimately lead to more cities adopting and diffusing sustainable mobility policies resulting in the achievability of the Green Deal's mobility targets. If external factors such as social and political factors play a role in the higher levels of policy transfer (H2), the EU should focus more on model cities. This consequence means that the EU does not need to invest in every municipality as in H1 but does so in a few selected model cities. These cities then serve as examples for other cities why the sustainable mobility policies of these model cities can be transferred to other European cities. With these two hypotheses established, this thesis aims to examine whether internal factors (policy adoption) or external factors (policy transfer) contribute to the measures taken by cities on sustainable mobility policies.

The continuation of this thesis will be as follows: the next chapter contains the case background of the Green Deal. In order to assess the cities, it is vital to have a good background of the Green Deal and to establish what targets have been set for sustainable mobility. In the following chapter, this study's policy arena is discussed, and the focus is on policy transfer theories in the theoretical framework. The mechanisms mentioned when drafting the sub-questions are linked to these policy transfer theories. Subsequently, the methods are defined and dissected in chapter four, and which approach, including the operationalisation, is taken to conduct the research. Central to this is content analysis via the Atlas.ti tool. After analysing the different cities' sustainable mobility policies, a comparison between these cities is made, after which a conclusion can be drawn on the importance of policy transfer on the sustainable mobility policies of European cities.

II Case Background: The Green Deal

Objectives to be met in sustainable mobility stem from the Green Deal. In this chapter, the Green Deal is further broken down and discussed through the "sustainable mobility" section of this policy document and the intended targets for the European member states.

2.1 Sustainable Mobility in the Context of the Green Deal

Adopted by the European Parliament (EP) in 2019, The Green Deal contains an ambitious policy package to make the European continent climate neutral by 2050. The EC expects to make more progress on energy and transport than previously projected (European Commission, 2020d). The EC emphasises that it has the lowest percentage of using renewable energy in the transport sector. By 2030, the transport sector is required to have this percentage at a minimum of 24%. Humankind can use renewable energy indefinitely and does not damage the environment in minimal form so that future generations can benefit from it. This part of renewable energy could include, for example, solar and wind energy (European Commission, 2020b).

Zooming deeper into the Green Deal, the EC is aiming to take the EU into a transition. This transition towards sustainable mobility will bring the continent a fair and prosperous society. This prospect should involve zero greenhouse gas emissions on a net basis by 2050. An essential part of this is to decouple the continent's economic growth from the use of polluting resources. Changes in society will be far-reaching, making citizen participation a prerequisite for achieving set targets in the policy document. With the Green Deal, the EU wants to lead the way at the global level and efforts at the continental level to inspire sustainable efforts at the international level. At this point, the Green Deal carries a "roadmap" of policy initiatives and measures needed to make Europe a climate-neutral continent. The frontline most closely linked to this thesis is the one on mobility; the mobility transition should be sustainable and fast (European Commission, 2019). A complete overview of all the Green Deal's spearheads can be found in Appendix A.

According to the Green Deal in 2019, the EC indicates that the proper course has yet to be found and that more far-reaching measures are needed. Without further action at the European level, greenhouse gas emissions will only be reduced by 60% by 2050 compared to 1990. As indicated earlier in this case background, the updated target is a 55% reduction by 2030. Obstacles and potential pitfalls are also indicated in the Green Deal. According to the Green Deal, it takes 25 years (a generation) for a business branch, including all value chains, to be transformed. The business sector should run on a circular economy, requiring this entire branch to be in transition. This transition must be initiated as early as 2025; otherwise, achieving the set goals will be impossible.

In the thesis, the focus is on the mobility sector, where the focus is now being refuted. Because the transportation and mobility sector are influential in the EU, it is the second most prominent type of expenditure for European households. In addition, this sector contributes 5% to the Gross Domestic Product of the EU, and ten million employees are directly involved in this sector. The EC's three main targets are sustainable, innovative, and crisis-proof mobility. The main target here is for the transport sector to reduce greenhouse gas emissions by 90% by 2050 compared to 1990 (European Commission, 2020e). An ambitious plan regarding the transport and mobility sector is considered urgent by the EC. While mobility often offers numerous benefits to users, the sector is still polluting, and many road accidents occur. This pollution also affects the health of citizens in the EU. Furthermore, the COVID-19 pandemic has hit the mobility sector hard on, and the companies in this industry need to become healthy again. Healthier businesses with livelihoods lead to jobs, income, and a growing economy on a sustainable basis (European Commission, 2020c).

2.2 Legislative: Mobility Targets from the Green Deal

The EC has drawn up a strategy for transport in the EU. From the vision, 111 policy initiatives have been drawn up to improve the mobility sector in the EU. Moreover, these policy initiatives are divided into the pillars of the mobility strategy: sustainable, intelligent, and resilient mobility. In addition, the policy initiatives are divided into ten key domains to create more overview. Targets have been set (see

the complete list in Appendix B) for the policy initiatives when policy goals must be met and/or established (European Commission, 2020a).

According to the EC, every European citizen feels the value of mobility and transport. Therefore, the commission considers it more important to set challenging, effective targets that involve the entire EU in the mobility sector. From the pillar of sustainable mobility, it is emphasised that greenhouse gases in the mobility sector must be reduced by 90% compared to 1990, as agreed in the Green Deal. Deploying emission-free vehicles to make transport more sustainable and directly reduce greenhouse gas emissions is crucial. In addition, there will be stricter emission standards for vehicles with air pollutants. Eventually, only low-emission vehicles will be marketable in the EU. The EU should stimulate the demand for this particular type of vehicle. Also, the rail network needs to be made more sustainable; an important spearhead is to have European train networks connected and more electrified. To become less dependent on fossil fuels, the EC has drawn up the following three objectives (European Commission, 2020f):

- Driving at least thirty million zero-emission cars and 80,000 zero-emission trucks on European roads by 2030
- By 2050, nearly all cars, vans, buses, and new heavy commercial vehicles will be emission-free
- Emission-free marine vessels and large zero-emission aircraft will be ready for market by 2030 and 2035

In addition, the EC insists that citizens should be given many options and sustainable alternatives to move from point A to point B. In this, cities should let their residents adjust their patterns by making the more sustainable options the most attractive. In parallel, freight should be routed more by rail. The following targets have been set in this regard (European Commission, 2020f):

- Collective transport for distances less than five hundred kilometres within the EU must be carbon neutral by 2030
- Train traffic on high-speed lines to double by 2030 and triple by 2050
- By 2030, there should be at least one hundred climate-neutral cities in Europe
- Rail freight will grow 50% by 2030 and double by 2050
- Inland waterway and short sea shipping transport will increase by 25% by 2030 and by 2050 by 50 %

The previously mentioned measures and policy initiatives of the EC involve prohibitive costs; the question is, therefore, who will foot the bill? Consequently, a vital point of the EC is to encourage the transition to zero-emission mobility. This incentive has to be there on the user side of the commercial

market as well as on the selling side. In addition, subsidies on fossil fuels should be ended, the EC stated. To achieve this transition goal, the following milestones have been set (European Commission, 2020f):

- By 2030, intermodal rail and waterborne transport will be able to compete on an equal footing with road transport in the EU
- External costs of transport in the EU will be covered by users in 2050 at the latest

The second pillar on which the mobility strategy is built is "smart mobility". Central to this is that the EU should maximise the benefits of innovative digital solutions and intelligent transport systems (ITS). Planning and purchasing trips across multiple European member states take much work. The EC wants to propose a framework for developing a system of integrated travel information and ticket sales. Ticket sales should be further digitalised in the future, and sales of paper tickets should be excluded. On airspace, a Single European Sky is a goal. Using drones and artificial intelligence should also further the progress of smart mobility. To this end, the following two targets have been set (European Commission, 2020f):

- By 2030, multimodal passenger transport is facilitated in the EU using integrated electronic ticketing, and freight transport is paperless
- By 2030, automated mobility will be widely distributed

As the last pillar of the mobility strategy, "resilient mobility" is identified. This pillar emerged partly as a result of the COVID-19 crisis. Due to the global pandemic, which showed the mobility sector's vulnerability, the EC wants to set a future-proof plan for the sector. A system that further generations can build on and trust. One of the spearheads in this is for transport companies to have easier access to external financing to take on new investments for the future. Unfair competition must be countered in this. The essence must always be that transport is affordable, accessible, and fair for passengers. The following two key points have been drawn up for this purpose by the European Commission (2020f):

- By 2030, a multimodal trans-European core network for sustainable and intelligent transport via high-speed connections will be up and running, followed by the expanded network by 2050
- By 2050, the number of fatal road accident victims in the EU will fall to almost zero

Many of the targets set in the transport field from the Green Deal apply to cities. Making cars electrified and greenhouse-gas-free directly affects cities, resulting in cities adapting their infrastructure. Among other things, electric charging stations need to be installed for the vehicles in the city, and a transition to an electric fleet of local public transport services is required. Train networks between major cities must be doubled, which means cities must cooperate nationally and internationally, an excellent option for policy adoption and transfer. Another goal of the Green Deal is for one hundred European cities to be climate neutral by 2030, a precursor to the 2050 European climate-neutral city. To summarise all the

information from this paragraph, Table 2.1 below shows the targets set in the area of sustainable mobility policy regarding the Green Deal:

Table 2.1 Targets Green Deal on Sustainable Mobility

Targets Green Deal on Sustainable Mobility
• Thirty million cars and eighty thousand trucks on a zero-emission basis on EU roads by 2030 • By 2050 all motorised vehicles emission-free • Emission-free marine vessels and large emission-free aircraft will be ready for market by 2035 • Collective transport for distances of less than five hundred kilometres carbon-free by 2030 • Rail traffic on high-speed lines should double by 2030 and triple by 2050 • One hundred climate-neutral cities by 2030 • Rail freight will increase by 50% by 2030 and double by 2050 • Inland waterways and short-sea shipping increase by 25% by 2030 and 50% by 2050 • Intermodal rail and waterborne transport compete on an equal foot with road transport by 2030 • Users will cover the external costs of transport in the EU by 2050 • By 2030, multimodal passenger transport in the EU is facilitated through integrated electronic ticketing, and freight transport is paperless • By 2030, automated mobility is widely distributed • By 2050 a comprehensive network of a multimodal trans-European core network for sustainable and smart transport via high-speed connections • Road fatalities in the EU to near zero by 2050

III Theoretical Framework

In the third chapter, the theoretical framework is formulated, discussing the policy arena for this study and causality concerning the variables. Chapter 3 concludes by describing policy transfer theories, focusing on the defined hypotheses of policy adoption (H1) and policy transfer (H2).

3.1 Policy Arena of Sustainable Mobility

From the EU, through the EC, with the approval of its Member States, the Green Deal has been drawn up. First, the EU is a political and economic union made up of twenty-seven countries, the twenty-seven member states. The EU has seven institutions and also seven bodies. One of these institutions is the European Parliament, which houses 751 parliamentarians elected every five years by the citizens of the EU. Together with the Council of the EU, the EP holds legislative power within the EU. This legislative power means these institutions decide on the European budget and appoint members of the EC. In

addition, European laws/directives can be adopted, amended, or rejected by these two institutions. According to the department, this Council of the EU consists of the 27 EU ministers in those respective departments. In contrast, the European Council consists only of the twenty-seven heads of government of the member states; this council gives impetus to policy developments. Executive power within the EU lies with the EC.

From a continental and national level, cities should implement this policy document at a regional level. Each member state represents a Euro commissioner to this commission. Within the EU, the EC is the only body that can propose new laws; the institution has the "right of initiative" (European Union, 2016). In January 2020, the EP adopted the Green Deal proposal by the EC (European Parliament, 2020). In addition, the EC checks whether member states to comply with their regulations; they do this out of European interest. The Court of Justice of the European Union (CJEU) has judicial power within the union. In it, the court has the task of verifying that European laws are correctly applied in each member state. Europe's two financial bodies within the EU are the European Central Bank (ECB) and the European Court of Auditors (ECA) (European Union, 2022). The European institutions are schematically illustrated in Appendix C.

Finally, there is the local level or European Cities. For this study, the focus is on six cities; these are Prague (Czech Republic), Stockholm (Sweden), Dublin (Ireland), Lisbon (Portugal), Eindhoven (The Netherlands), and Ghent (Belgium). A more in-depth look at these cities is given in paragraph 4.2 of the case selection. In 2002, the CIVITAS[1] program was set up by the EU to help achieve the goals set in the Green Deal on mobility and transport. It acts as a city network for cities and seeks to improve progress on sustainable mobility through networking. In addition, almost 70% of the EU's inhabitants live in urban areas, where greenhouse gas emissions are highest, and the necessity is proved high for the platform. Currently, CIVITAS has three major projects, one focused on Sustainable Urban Mobility Plans (SUMP); this is discussed further in the data collection part (Civitas, 2022a).

Policy transfer's usefulness in sustainable mobility must be demonstrated before different theories can be applied to the cases. Glaser et al., (2022) show in their research that policy transfer is a mechanism that can be used in the mobility/transport sector. As well as, nation-states, cities, and transport companies can share their knowledge and experiences to optimise the mobility and transport sector. Furthermore, there is evidence that policy transfer can influence policy measures taken in the mobility sector. In Europe, this is partly done through policy networks, communities, and databases (Marsden & Stead, 2011). A critical note is that policy transfer in sustainable mobility is a complex process. Urban mobility and the transition to sustainable mobility can be seen within an institutional framework. This process involves many different institutions (actors), which does not facilitate the progression and advancement of the transition to sustainable mobility. The different institutions involved here include culture, customs (informal), laws and regulations (formal), transport companies, municipalities (governance and

[1] The choice of cities is because of the CIVITAS (literally "city" in Latin) initiative of the European Union.

organisational institutions), and the availability of resources (resource allocation) (Canitez, 2020). On a global stage, the topic of transport and mobility attracts the interest of policymakers worldwide. This section, therefore, shows different modes of policy transfer; this has been diagrammed by Huang et al., (2023), illustrating that the mechanisms of policy transfer can be either: top-down, bottom-up, or horizontal. Their schematic layout can be found in Appendix D.

Graham et al., (2013) describe top-down policy transfer as a vertical approach to the process. Examples include the US government offering incentives to its states. Another example can be seen in the EU's influence on other member states. Here it can be remarked that this process occurs more often when organisations mirror themselves against other organisations. As a result, the organisation imitates the processes and policies of another organisation. This process intensifies when the organisation (the subordinate) is so dependent on transferring policies that it leads to isomorphism (DiMaggio & Powell, 1983).

Besides the top-down principle, the bottom-up mechanism is also under vertical policy transfer. This mechanism can be considered the adopted policy from municipalities towards national governments. Critical policy entrants, research institutes, and think tanks are vital actors in these vertical processes. Research has shown that in the bottom-up perspective on mobility, cities are more likely to adopt information and policies when they stem from national sources than when they are on a European scale. Timms (2011) argues that cities tend to gravitate towards national rather than international sources because it is easier for cities to consult this information. They believe they differ from other cities, meaning information is only sometimes beneficial. This non-similarity with other cities comes ahead from the structure and responsibilities of cities.

In contrast, horizontal policy transformation can be seen as same-level transformation. Here, the organisation is exact so that it can be conceived as provinces exchanging policies with each other. The aim is to compare the policies of different European cities and the role of policy transfer in this. Thus, the focus here differs and is not on the performance achieved against targets to be met.

Research by Macário & Marques (2008) shows that in the field of policy transfer between interlocal cities, there are several criteria before it can be put into practice (see Appendix E). Horizontal policy transfer or localisation transfer applies to the six case studies under study in this thesis. All six cases are socially and geographically similar. These characteristics require similarities between actors; otherwise, successful policy transfer cannot be guaranteed, namely:

- Cities must have the same goals, and the legal framework must be similar. If shared transport is prohibited by law in one city, adopting it from another becomes difficult.
- Cities must have the same political framework based on which, in this case, sustainable mobility is a spearhead.
- The cooperating cities must have an overall prominent level of public acceptance, and enforcement issues should be manageable for policy implementation.

In order to take the actual action on policy transfer, Macário & Marques (2008) prepared a step-by-step outline for the best possible transfer policy. From the description of the different theories, the following horizontal policy transfer for this thesis can be shown for this study below in Figure 3.1:

Figure 3.1: Horizontal Policy Transfer European Cities

Acuto and Leffel (2021) state that the use of policy transfer in cities (networks) is on an upward trend and is a widely known concept among policymakers to make progress within cities nationally and internationally. Here, at the local level, policy transfer can help different cities learn from each other and thus improve the transition to sustainable mobility. The mechanisms of policy adoption and transfer are discussed in the next section. Figure 3.2 gives an overview of the multi-level policy arena of sustainable mobility policy:

Figure 3.2 Multi-Level Policy Arena Sustainable Mobility Policy

3.2 Policy Adoption

Policy transfer is a mechanism promoting policy adoption and diffusion. This definition is a relatively broad concept that can be multiple interpreted. To give added force to the term policy transfer (diffusion), it is broadly defined as follows: "that one government's policy choices are influenced by the choices of others (Graham et al., 2013)". Another definition for diffusion is: "Diffusion is the communication process through which an innovation travels or spreads through specific channels from a person, an organisation, or any unit of adoption to another within a social system over time (Kee, 2017)".

Policy adoption can be seen as policymakers' choice to modify the current policy, a policy change. Mohr (1969) describes that three different mechanisms must be present for policy adoption to be successful, namely: motivation, capacity and obstacles. Firstly, the motivation; if actors in an organisation sit still, no policy adoption will occur in this place. Within an organisation, there must be incentives and ambition to initiate a change; there must be an ideology. Without these motivational factors, the policy adoption process cannot occur within an organisation. The second important mechanism is that an organisation must have enough resources to make the policy adoption process

successful. These resources mainly focus on material factors, with financial resources crucial. Mohr (1969) claims that there is a relationship between a high expenditure budget and the increase of policy adoption in an organisation (Berry & Berry, 1990). Thirdly, obstacles have an essential role in policy adoption in an organisation, both within the organisation itself and the community outside it. Organisations must be prepared to overcome obstacles when it is not in the organisation's interest but the community's. Getting public opinion on board with this is essential; by taking measures that lack support, the policy adoption process will not be successful. This effect means that an organisation should take ineffective measures first and then, with the community's approval, adopt positive measures for the organisation (Mohr, 1969). Successful application of policy adoption in an organisation means that the mechanisms of motivation and resources must be high. In contrast, the mechanisms of obstacles for the organisations must be low.

For this thesis, the focus is on policy adoption in cities; therefore, three examples will follow in which the mechanisms of policy adoption have or have not worked. For example, in cities in southern California (United States), motivation is essential in adopting climate policies. Climate change knowledge, resources, and public awareness are present in these cities. However, without the right cause and willingness to cross obstacles, it is not possible to implement policy adoption in these cities (An et al., 2022). Policy adoption is also applied in creativity and inclusion, as in Amsterdam. According to research by Alsayel et al., (2022), Amsterdam is deficient in their 2018 policy, in which the municipality fails to comply with policy initiatives regarding ageism and ableism. For this, the municipality used policy adoption by looking at other cities. Due to a lack of able government staff, the policy has fallen behind in implementation. In this example, the municipality's capacities were insufficient for successful policy adoption. As a third example, the focus is on districts in Indonesia. Within these districts, horizontal policy transfer is used, which also applies to the cities in this study. In Indonesian districts, the smoke-free policy was adopted more by other districts between 2004 and 2015, when neighbouring districts had already adopted this policy. Policy adoption here thus acts as a contagious effect on districts among themselves. In addition, policy adoption was used more when the respective district had a higher Gross Domestic Product (GDP) (Septiono et al., 2019). All these examples show that Mohr's (1969) mechanisms must be working for successful policy adoption; this means high motivation, many resources available and willingness to take obstacles/few obstacles present.

With the examples described above, policy adoption can now be applied to the selected cities in this study. One of the mechanisms for adapting policy, as mentioned, is motivation. The motivation of the six cities mentioned in this thesis is the publication of the Green Deal with its targets for the mobility sector. Member states of the EU have agreed with each other to achieve specific targets, which indirectly affects the six cases in this study. Deciding to change policy usually involves capacity constraints, and policymakers must overcome obstacles. Besides political support, policymakers need financial resources to adopt policies to achieve desired goals. The argument can be made that an increase in

financial resources within an organisation positively affects policy adoption (Lestari et al., 2022). Therefore, this thesis proposes that:

H1 European cities have a greater adoption of sustainable mobility policies when more material resources are available.

3.3 Policy Transfer

Horizontal policy transfer may occur due to different mechanisms: coercion, competition, copying, and learning (external factors). Coercion usually arises from influential organisations whose policies impose their will on other organisations. Examples include the IMF and the World Bank imposing strict conditions on their loans. Organisations need more room for manoeuvre as a result. This mechanism occurs when the vertical policy transfer via the top-down principle occurs (Graham et al., 2013). Other studies refer to coercion as top-down policy transfer.

Competition is the mechanism where political factors are significantly involved. The competitive mechanism is more of an economic nature where governments compete against each other to keep the economic policy outcomes of competing organisations on par. This mechanism has developed with emerging globalisation. In addition, it is also possible for government policymakers to out-compete each other on the policies being pursued. The labour market can be taken as an example. When a government introduces lower income taxes, this should create an influx of workers. As a result, policymakers can attract workers away from a particular region which leads to economic shrinkage in this particular region. In contrast, the region where workers migrate benefits from economic growth (Shipan & Volden, 2008). In the case scenario in this study, this would mean that the political actors compete against each other based on green sustainable mobility policies. An example is specific cities entering into exclusive contracts for providing green electricity for mobility vehicles. This situation allows policymakers and politicians to claim credit for their course of action. However, climate change policymakers are more cautious regarding policy failure. Because the topic of climate change is such an urgent one globally, policymakers want to avoid blame (Howlett, 2014).

Copying can be seen as a socialisation form of policy transfer and has symbolic or normative values on society rather than being of policy benefit to a government. Here, a government sees societal gains in decision-making for its policy area and image abroad (Marsh & Sharman, 2009). These mechanisms are also seen by Karch & Cravens (2014) as distinct mechanisms that are neither vertical nor horizontal. An important mechanism that also fits into this is copying policy when it fits into the legal framework. In this case, though, the two cases should be similar in several respects, as described in Appendix E.

Learning is seen as a rational decision by governments to make outcomes of decisions more impactful and efficient. This mechanism involves basing new policies on policies from similar policy problems. Here, policymakers then adopt lessons from the past to apply in the future or use the experiences of other policymakers to draft new policies. Actors within the policy domain here use each

other to rapidly and effectively tackle a policy problem and implement solutions (Cairney, 2019). Therefore, this thesis proposes that:

H2 Social and political factors are positively associated with greater use of policy transfer in sustainable mobility policy.

Figure 3.3 shows the causality between the variables, the increase in the use of policy adoption and transfer resulting in the development of sustainable mobility policy. Once the hypotheses have been established and the multi-level policy arena of sustainable mobility policy have been discussed, it can be shown schematically what the expectation regarding the results of this study are. As indicated, the assumption is made that without financial resources (H1), social and political factors (H2), there is no evidence that sustainable mobility policies need to be adopted and spread further. On the contrary, higher material (internal), social and political factors (external) positively affect the policy adoption and transfer of sustainable mobility policy. To summarise, Figure 3.3 below schematically illustrates the different mechanisms of policy adoption (internal) and transfer (external):

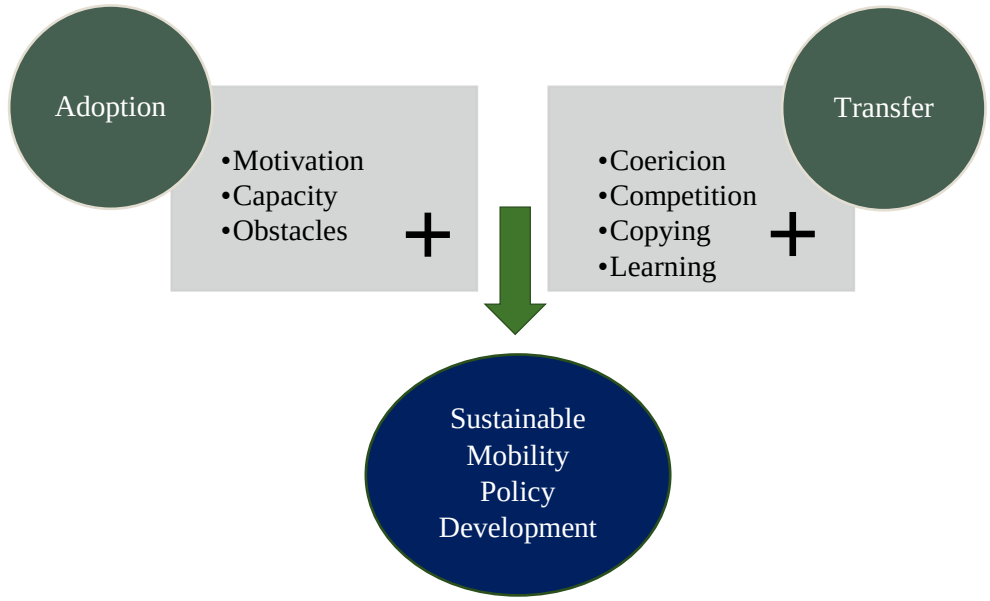

Figure 3.3: Causal Path Diagram of H1 & H2

IV Methodological Framework

To elaborate on the study, the following chapter follows the research design and the methods to measure the variables (material, political and social factors) from the research question. Furthermore: the operationalisation, reliability, and validity are discussed in this fourth chapter.

4.1 Research Design

A basal strategy is established for answering the prepared main question and sub-questions for the research design. In the strategy part, there is a step-by-step demonstration of how the main and sub-questions will be answered. The design part involves formalising the strategy, or in other words, within which frameworks the research is carried out (Babbie, 2014). Before establishing a research design, it is essential to ascertain what kind of main question has been drawn up for the study (Klok & Junjan, 2020). For this thesis, the central objective is to what extent there is policy transfer between the six cities that aim to achieve Green Deal mobility targets.

What gives the research a qualitative basis is that policy documents from different urban networks and cities are studied. The most recent version of the SUMP is used for each city. These policy documents are freely available through the municipalities of the chosen cities; a total of six documents are coded. Within Europe, the SUMP is described by the EC as follows: *"a strategic plan designed to satisfy the mobility needs of people and businesses in cities and their surroundings for a better quality of life. It builds on existing planning practices and takes due consideration of integration, participation, and evaluation principles"* (European Commission, 2022). A SUMP aims to address transport-related problems in urban areas more efficiently. In this, a SUMP differs from traditional transport planning. For instance, a SUMP focuses on people rather than traffic and takes a long-term, sustainable view (Oyofo, 2019). An overview of the differences between traditional transport planning and a SUMP can be found in Appendix F.

The EU Urban Mobility Observatory was set up by the EC to exchange information and knowledge on sustainable mobility in European cities. It is considered the main observatory for urban mobility in the EU (Eltis, 2020) (European Commission, 2013). Eltis offers on its website a database where the progress of mobilisation plans can be monitored per country and city. Through an interactive tool, it is thus possible to see whether a SUMP is available in the requested location and what projects the government is working on in that area regarding sustainable mobility (Eltis, 2022). This database also serves as a starting point for collecting data for the six chosen cities. The cities were chosen because they are geographically dispersed in the EU. In addition, the cities can be divided into pairs regarding the population of the cities. For instance, Prague and Stockholm have over a million inhabitants, Dublin and Lisbon have around half a million, and Eindhoven and Ghent have around 250,000 inhabitants. To provide background on cities, the 2020 Deloitte City Mobility Index is used for the cities of Dublin, Lisbon, and Stockholm. This ranks and rates cities on urban mobility based on three pillars: performance and resilience, vision and leadership & service and inclusion.

A schematic overview of which documents will be analysed for the study is as a result of this provided in Table 4.1 below:

Table 4.1 Units of Analysis Research

Case: Sustainable Urban Mobility Plans				
Units of Analysis			Year	Pages
Prague	UoA 1	The Sustainable Mobility Plan for Prague and its suburbs	2019	50
Stockholm	UoA 2	Urban Mobility Strategy	2012	72
Dublin	UoA 3	Transport Strategy for the Greater Dublin Area 2016 – 2035	2016	124
Lisbon	UoA 4	Move Lisboa	2020	37
Eindhoven	UoA 5	Eindhoven op weg	2013	84
Ghent	UoA 6	Mobiliteitsplan Gent	2015	226

Through the Atlas.ti tool, and with the help of the codebook, the various policy documents are analysed. This analysis enables us to identify which factors and mechanisms of policy transfer play a significant role in mobility policies. For each city, this creates an analysis from which a comparison of the different cities ultimately emerges. This study has a small N, as only six European cities are included in the scope of the study. As a result, this makes it relatively convenient to compare the six cities and apply the concept of policy transfer. Through deduction for the research process, namely starting with a theoretical model, conclusions are made through the research design based on the analysed data.

The codebook (see Table 4.1) is established from this theoretical framework to evaluate the drafted hypotheses. The code book mentions three factors that can improve or worsen the policy transfer process. These three factors are material factors, shortcomings of financial resources, and legal frameworks. According to Figure 3.3, the existence of material factors and financial resources should positively contribute to policy adoption on sustainable mobility policies.

In addition, the four mechanisms (coercion, competition, copying, and learning) named in the theoretical framework are included in the codebook. These codes should show what drives different cities to adopt and diffuse policy transfer and the mechanisms involved. As a final code, vertical policy transfer is named. This mechanism does not fall within the research question, but it is evident to include it in the study. In this way, it is possible to analyse the extent to which cities use policy transfer involving other organisations and/or governments of another hierarchical level.

Table 4.1: Codebook Policy Adoption & Transfer Theories

Codebook Policy Adoption & Transfer Theories	
Code	When to use/description
1. PTT_material	Refers to the existence of material factors (not financial) to adopt/diffuse appropriate policies on sustainable mobility.

2. PTT_financial	Refers to the availability of financial resources to adopt/diffuse appropriate policies on sustainable mobility.
3. PTT_motivation	Refers to motivation reasons to adopt/diffuse appropriate policies on sustainable mobility
4. PTT_legal	Refers to the existence of a legal framework to adopt/diffuse appropriate policies on sustainable mobility.
5. PTT_obstacles	Refers to the obstacles in the process to adopt/diffuse appropriate policies on sustainable mobility.
6. PTT_political	Refers to political backing to adopt/diffuse appropriate policies on sustainable mobility.
7. PTT_coercion	Refers to compulsive adopt/diffuse of policy by other organisations
8. PTT_competition	Refers to cities using other cities' sustainable mobility policies to keep pace in terms of economic progress.
9. PTT_copying	Refers to cities blindly copying their sustainable mobility policies from other cities based on geographical and social equivalences.
10. PTT_learning	Refers to cities taking advantage of other cities and learning from them in implementing their sustainable mobility policies.
11. PTT_socalisation	Refers to cities implementing cities' sustainable mobility policies with the reason of positively colouring the social debate in society and not as goals of achieving set sustainable mobility targets.
12. PTT_vertical	Refers to cities that use policy transfer but employ vertical mechanisms rather than direct horizontal connections in doing so.

4.2 Case Selection & Data Collection

As described in paragraph 3.2, CIVITAS is an EU platform that supports cities in meeting the Green Deal goals on sustainable mobility. One of its projects is promoting SUMPs, named SUMPs-UP. With this project, the platform seeks to remove obstacles to setting up and implementing SUMPs in cities. This project aims to: "Enable mobility planning authorities across Europe to embrace SUMP as the European-wide strategic planning approach, especially in countries where take-up is low, and the negative effects of transport are severe" (Civitas, 2022b). Civitas' project page is universally accessible for citizens and project participants to learn about the preparation and implementation of mobility plans. Guidelines are available, and it is possible to create a SUMP self-assessment via a custom-made tool. CIVITAS has produced a report summarising the status of SUMPs in the EU. From a survey conducted by the platform in 2017, in which 328 cities responded, 37% said they had a qualitative SUMP available for their city. Countries leading the way in this are Belgium and France. Underperforming countries lack national support, lack political will and/or lack available resources (financial, priorities) (Durlin et al., 2018). This is in line with the expectations under H1.

Table 4.2 provides general information (country and inhabitants) on the cities selected for this study; this section will elaborate on each town further. In addition, Figure 4.1 illustrates the geographical location of the cities in Europe. The illustration shows that cities are spread north, west and south across the European continent.

Table 4.2: General Information Selected Cities Case Study

City	Country	Inhabitants (million)
Prague	Czech Republic	1.3
Stockholm	Sweden	1.0
Dublin	Ireland	0.5
Lisbon	Portugal	0.5
Eindhoven	The Netherlands	0.25
Ghent	Belgium	0.25

Figure 4.1: Selected Cities Case Study

4.2.1 Prague

Prague is the capital of Czechia in Central Europe, and the city's population is 1.3 million inhabitants in 2021 and 2.1 million residents in the larger urban zone. Of all the six cases for this study, Prague has the greatest catching-up to do in terms of sustainable mobility. To this end, they did adopt active policies by drafting a SUMP in 2019 and an interactive map showing which bottlenecks in the city are being invested in (Polad Prahu, 2019). Bottlenecks in Prague include the fact that it is not a bicycle-friendly city, making sustainable transport difficult. However, it can be noted that Prague has started to make up the ground; in 2022, the city scored high in mobile innovation, and in the field of clean transport, it even surpassed the Scandinavian cities Helsinki and Oslo (Easypark, 2022).

4.2.2 Stockholm

Stockholm is the capital of Sweden and had a population of just under one million at the end of 2022, while the metropolitan area has a population of 2.4 million. From the Deloitte study, Stockholm is praised for its high-quality transport system, having a varied range that can reach many places (high coverage). In addition, the city has taken the initiative to be fossil fuel free by 2040 and encourage the purchase of electric vehicles. Areas for improvement are the affordability of public transport and safety regarding electric and non-electric vehicles, mainly cyclists (Deloitte, 2020c).

Before the EC took the initiative to promote the SUMP, the city of Stockholm published a high-profile SUMP in 2012. This SUMP focuses on the targets to be met by 2030, and, like Dublin, it also takes out the region from outside Stockholm. Planning and objective are the key terms in this mobility plan (The City of Stockholm Traffic Administration, 2012).

4.2.3 Dublin

Dublin is the capital of Ireland and has over half a million inhabitants, meaning that over 11% of Ireland's total population (4.8 million) lives in the city. Ireland's transport system is described as challenging; Deloitte, however, sees that much investment has been made to integrate the efficiencies of different modes of transport. With the expectation of further population growth in the city, there will need to be substantially more investment in the overall mobility infrastructure. These investments should include a greater focus on public transport, with only 20% of the mobility budget going to public transport in 2020. Due to the high use of cars in the city, residents should be enticed to use other forms of mobility. Punctuality in public transport is a spearhead here (Deloitte, 2020a).

Dublin's SUMP focuses not only on the city itself but also the region around it, the Greater Dublin Area. The government adopted the policy document in 2016, and the transport strategy plan focuses on the period from 2016 – 2035 (National Transport Authority, 2016).

4.2.4 Lisbon

Portugal's capital Lisbon had over half a million inhabitants in 2021; Greater Lisbon (the agglomeration) had a population of over two million that year. Scoring well according to the 2020 Deloitte Mobility index, the city is a top performer when it comes to vision, strategy, and sustainable initiatives. In Prague, cycling is not a standard mode of transport in the city; only in 1% of cases is it used by bicycle for travel. This low share in cycling is because the city has a hilly nature, making it difficult to get around via bicycle or on foot. Therefore, the use of private vehicles is high in the city and should be reduced by the local government by investing more in public transport (Deloitte, 2020b).

Lisbon's SUMP focuses on the short term, that of 2030. The policy plan describes the city's mobility situation in 2020 and what the city wants to achieve ten years later. Concrete proposals and implementations for each form of transport should contribute to this (Municipal de Lisboa, 2020).

4.2.5 Eindhoven

Eindhoven is a city located in the south of the Netherlands and had a population of just under 250,000 at the beginning of 2022. For the city of Eindhoven, limited information is available regarding how the city scores in terms of sustainable mobility. In addition, the city itself joined efforts to impact sustainable mobility in the region. In cooperation with local companies and the Netherlands government, the "smartest" city in the Netherlands is trying to develop innovative technologies and achieve breakthroughs in electrification and future-oriented sustainable mobility (Brainport Eindhoven, 2023).

This strategy is also reflected in the city's SUMP, which sets concrete sustainable mobility targets for 2040. Innovation is the central theme for Eindhoven when it comes to the transition to sustainable mobility (Gemeente Eindhoven, 2013).

4.2.6 Ghent

Located in northwest Belgium, Ghent had a population of over 250,000 in 2020. Because the city is a tourist spot, the topic of mobility has always been a focal point for the local government. In 1993, a mobility transformation plan was implemented to make Ghent an even more attractive city. This plan was reviewed in 1997 and updated to meet the needs of that period (Boussauw, 2014).

That mobility is still an urgent theme within the Municipality of Ghent is evidenced by the SUMP that the city has produced. The document, which identifies mobility as an engine for the city, is 226 pages long and elaborates on the transition to sustainable mobility. Starting from a management vision, the plan for the city is unfolded in which each type of traveller (cyclist, pedestrian, etc.) is discussed in detail by species (Stad Gent, 2015).

4.3 Operationalisation

This paragraph focuses on how this study's internal and external variables (material, political and social factors) are measured. Table 4.3 provides an overview of the theoretical concepts, their mechanisms, and how and with what methods these variables are measured. The policy in this Table means the

sustainable mobility policy of the selected cities. The variables in this study can be considered at a nominal measurement level. No clear ranking exists for the factors related to the main question.

As this thesis indicates, the main question consists of two variables. For operationalisation, material factors are first considered. The associated mechanisms of capacity, motivation, and obstacles should contribute to determining the extent to which these mechanisms support cities' adoption of sustainable mobility policies. For the political and social factors, the mechanisms from the theoretical framework form the basis: coercion, competing, copying, and learning. The measurements for both factors are done using the prepared codebook, which can be found in Table 4.1. The software programme Atlas.ti is used for this purpose. Through this tool, it is possible to conduct qualitative research by systematically coding texts in the programme. Results can be exported via the program, indicating to what extent the cities use adoption and diffusion to prepare their sustainable mobility policy.

Table 4.3 Operationalisation Research

Theoretical Concept	**Variables**	**Mechanisms**	**Measurement**	**Data Collection Method**
Policy Adoption *(internal)*	Material Factors	Capacity	• The (non)availability of financial resources to initiate the transition toward sustainable mobility policies • The (non)availability of a legal framework to initiate the transition toward sustainable mobility policies	Atlas.ti
		Motivation	• Reasons for transition to sustainable mobility	
		Obstacles	• The (non)availability of financial resources to initiate the transition toward sustainable mobility policies • Other material obstacles hindering the adoption/diffuse policy process	

Policy Transfer *(external)*	Political and Social Factors	Coercion	• Being forced to adopt/diffuse policies by other institutions	Atlas.ti
		Competing	• Adopt/diffuse policies so that other cities suffer economically • Claiming successful economic policies at the expense of other cities	
		Copying	• Adopt/diffuse policies by blindly copying from other cities by learning from other cities • Adopt/diffuse policy with the reason of positively colouring the social debate in society and not as goals of achieving set sustainable mobility targets	
		Learning	• Adopt/Diffuse policies by learning from other cities to implement them in their city	

4.4 Reliability & Validity

Before addressing the reliability and validity of the study, it is crucial to define the terms. According to Babbie (2014), reliability can be seen as "a particular technique, repeatedly applied to the same object, yields the same results each time." To increase the reliability of the study and arrive at comparable results in the case of reproduction, it was chosen to analyse the unit of analysis from six different cities. This analysis is done through a software tool and a codebook. The previously coded text is reviewed to avoid tunnel vision to ensure the entire text is coded equivalently. As a result, the study's author verifies the data several times. Data verification should also minimise the risk of human error in the Atlas.ti programme.

When the validity of a study is considered, it looks at whether what is actually being researched is what is intended. Determining whether a study is valid requires looking at how data is collected, where it comes from, and whether the measurements in the study are precise (Golafshani, 2015). To ensure data triangulation in this study, the choice was made to use data from different European cities. In addition, the decision was made to analyse a similar document for the selected cities. For this study, it means that the most recent SUMP was used for all cases. Within the scope of the study (cities in the EU), a diverse range of data is analysed. Herein also lies a limitation of this research. By focusing the

scope of the research on the EU's cities, the study only focuses on this part of the global scale. Within the study, both EC policy documents and local policy documents of member states are used; this component should also contribute to the validity of the research.

V Analysis

In this section, the mobility plans of the six cities are analysed using *Atlas.ti*. This tool allowed for a thorough analysis of the plan, which was divided into three specific sections; material, social & political considerations, and additional factors.

To rank the cities for the analysis, Table 5.1 is created to categorise the cities based on the number of codings determined from the study of the SUMPs. The number of policy adoption and transfer codings have been added together to rank the cities for the analysis, with Ghent coming out on top. Furthermore, Table 5.1 shows the level of policy adoption and transfer in the cities; with Ghent ranking high in both categories. The cities are analysed in the order of this ranking.

Analysis of the cities' SUMPs revealed that the top three cities for policy adoption were Ghent, Dublin and Prague. These cities used policy networks and communities to strengthen their policies, resulting in a high number of material factor codings in their SUMPs. These cities accounted for 65% of all material factor codings in this study, highlighting their robust policies. Consequently, higher external factors (H1) in the SUMPs lead to higher policy adoption. Policy transfer mechanisms (coercion, competition, copying and learning) are not applied uniformly across all cities. The results of policy transfer at distinct levels in Ghent, Dublin and Prague were measured. Stockholm scores low on policy adoption but high on policy transfer; giving the city a high overall ranking. Eindhoven scores ''medium'' on policy adoption and transfer, making it a natural middle runner. Lisbon's SUMP is limited in size, involves a narrative format, and lacks concrete measures and targets for sustainable mobility. Lisbon also has the lowest combined score regarding the number of codes; with only 13% of all H1 and H2 codes affecting this city.

Based on the analysis presented in Table 5.1, a preliminary conclusion can be drawn which confirms H1 and partially confirms H2. The cities that score highly on policy adoption (H1) also tend to have implemented a greater number of sustainable mobility policies, indicating a strong relationship between policy adoption and the implementation of measures. However, the relationship between policy transfer (H2) and city rankings is less strong, as not all cities have adopted the same policy transfer mechanisms. The following sections will delve deeper into the influence of material, social & political factors on policy adoption and transfer specifically for each city, to provide a more comprehensive understanding of the unique factors that contribute to the success of SUMPs in each city.

Table 5.1 Causality Hypotheses and Policy Transfer

Ranking (codings)	City	Policy Adoption (H1)	Policy Transfer (H2)
1st – 38	Ghent	High	High
2nd - 35	Dublin	High	Medium
3rd - 31	Prague	High	Low
4th - 27	Stockholm	Low	High
5th – 26	Eindhoven	Medium	Medium
6th – 24	Lisbon	Low	Medium

5.1 Ghent

In 2015, Ghent published a 226-page mobility plan detailing its plans and vision for 2030 (Stad Gent, 2015). Out of all the cases included in this study, Ghent's SUMP is the most extensive document in terms of its length and level of detail.

Internal Material Factors

The SUMP of Ghent, Belgium, contains numerous non-financial factors related to policy transfer. As well as obstacles that must be overcome for the transition to sustainable mobility, as shown in Table 5.2. Ghent municipality works closely with Ghent University, which provides ongoing studies on mobility to the city council. This results in the municipality adopting policies based on scientific evidence and adjusting them as necessary when new reports and studies indicate that previous objectives have not been met. The municipality also seeks to expand its cooperation with Ghent University and private partners to advance mobility initiatives.

Regarding financial planning, the SUMP concludes with an action plan that includes cost estimates for some individual measures, such as €15,000 for the development of area-wide pedestrianisation procedures. However, it provides limited information about the financial resources available to the city for mobility initiatives. In legal terms, the SUMP specifies that all municipal mobility plans are subject to the provisions of the national Mobility Decree.

Obstacles

The SUMP of Ghent identifies numerous obstacles to achieving a sustainable mobility policy in the city. For example, the city's public space was designed to accommodate car traffic in the late 1990s., with little emphasis on sustainability. This highlights the need for greater cohesiveness and integration among the various policy plans in place. Many mobility projects in Ghent are interconnected and progress in one area may be hindered by inadequate infrastructure or incomplete implementation in another area. Furthermore, the city's previous mobility plan dates back to 1997, and insufficient attention has been

paid to updating it over the years. These factors contribute to the challenges Ghent faces in achieving its sustainable mobility objectives.

Table 5.2: Material Factors Ghent

	Material	Financial	Legal	Obstacles
Ghent	8	1	1	14

External Social & Political Factors

Table 5.3 shows that Ghent's SUMP is primarily influenced by the learning mechanism, while political factors are barely discernible. Instead, the city maintains close collaboration with the Flemish Government[2], but local politics are not mandated by any laws or decrees. Additionally, coercion mechanisms are absent in the city's policy adoption and transfer.

Ghent's City Council views the shift towards sustainable mobility as an opportunity for economic growth, particularly by revitalizing old industrial sites. This approach also involves mobility, so these business parks should be easily accessible for visitors. Ghent also aims to establish itself as a prominent cycling city in Europe, emphasizing the importance of promoting cycling as an alternative mode of transportation, improving bicycle parking policies, and granting bicycles more space in the inner city,

Ghent's mobility plan is based on the learning mechanism and involves various levels of cooperation. At the regional level, the city collaborates with other Flemish municipalities to improve mobility within and between them. At the national level, Ghent aims to collaborate closely with stakeholders in the transport sector, including the province, the Flemish region's mobility department and De Lijn, the public transport provider. On a European level, the city learns from other European cities and their approaches to mobility problems. For example, Ghent looks to Copenhagen as an example of a city that uses its sustainable mobility profile as a city-marketing tool. The city also conducts research on solutions to specific problems, such as air pollution and incorporates insights from foreign studies. For instance, research shows that greening the car fleet is a quick and effective solution to tackle the low air quality in Ghent. Furthermore, the municipality benchmarks other European cities to find solutions to parking problems, learning from similar cities' experiences.

Table 5.3: Social & Political Factors Ghent

	Political	Coercion	Competition	Copying	Learning
Ghent	0	0	3	0	11

[2] This does not include the national government of Belgium.

Additional Factors

The SUMP of Ghent outlines several motivational reasons to produce the document, whit mechanisms of vertical policy transfer appearing, as demonstrated in Table 5.4. The primary motivation of Ghent is to initiate a modal shift, as more than half of the 650,000 daily movements in Ghent are made by car. The city aims to increase the proportion of walkers and cyclists in the total number of trips, with specific targets outlined in Appendix G. Another motivation is to reduce CO2 emissions by 20% by 2020 compared to 2007, to become a climate-neutral city by 2050. The need is high; in 2012, an average of 1/3 of all fossil energy consumed by families in Ghent went towards mobility (Stad Gent, 2015). Ghent signed the Covenant of Mayors in 2009 to combat climate change, like Lisbon.

On the socialisation front, Ghent is also tackling mobility poverty, which occurs when someone is excluded from social life in multiple domains due to a lack of transport. The municipality recognizes the importance of investing in mobility for these individuals. As a consequence, public transport is free in Ghent for young people aged 6 to 14, to stimulate their use of public transport and create a future routine.

The city of Ghent is engaged in vertical policy transfer at both the regional and provincial levels, due to its status as an economic hub designed by the province of East Flanders. This designation has placed responsibilities on the city to invest in mobility, particularly in the seaport area, which is of logistical importance to Flanders. Furthermore, the Flemish region provides financial support to the city for economic activities through spatial management plans that include conditions for funding.

Table 5.4: Additional Factors Ghent

	Motivation	**Socialisation**	**Vertical**
Ghent	10	4	6

5.2 Dublin

Dublin has drawn up a mobility plan for the period from 2016 to 2035, and the 124-pages report gives the Dublin Area and the city of Dublin a major role (National Transport Authority, 2016).

Internal Material Factors

Table 5.5 shows that material factors play a crucial role in Dublin's mobility plan; more than half of the codes in the coded SUMP document result from material factors. Of the non-financial material factors, it is worth highlighting that Dublin City Council has divided the Dublin Greater Area into six different corridors; see the illustration of these corridors in Appendix H. Reports have been prepared for these different corridors to create a unique, separate policy plan. The accessibility of the city and the areas around it are divided into six distinct parts.

The (un)availability of financial resources often comes up in Dublin's SUMP. The introduction to the policy plan analyses the previous strategy. This analysis shows that not all goals have been achieved, with only one reason given for this: the limitation of funds. Consequently, it has been prioritised that short-term goals can only be realised when the financial budget is in place. The SUMP sets out fixed amounts for projects to be implemented in the targeted strategy.

The policy document gives significant attention to law-making, and the legal framework involved. The city sees itself as an authority in this; when creating a new strategy, this authority should follow a roadmap which is briefly highlighted in the SUMP. Not only national and regional legislation is included in the SUMP, but European directives are also discussed for the legal framework. With each strategy, both a Strategic Environmental Assessment (SEA) and an Appropriate Assessment (AA) are prepared before the strategy is developed and implemented.

Obstacles

Public transportation in Dublin is viewed as unreliable since it frequently runs late and is barely offered. The city's financial resources are insufficient, according to the stated justification. The city also finds a mismatch between supply and demand in Dublin's transportation network. Examples include the fact that there are many delays in the construction of new infrastructure, that the city is frequently congested with traffic, and that there are numerous disruptions in rail traffic.

Table 5.5: Material Factors Dublin

	Material	**Financial**	**Legal**	**Obstacles**
Dublin	4	7	9	6

External Social & Political Factors

Except for learning, the various mechanisms of policy diffusion are rare in Dublin's SUMP, as shown in Table 5.6. However, several political factors were present in the creation of Dublin's policy document. Before drafting the mobility plan, the city sought input from various groups. These groups have diverse backgrounds: the general public, the corporate industry, universities and transportation companies. In addition, input from political parties was also requested to form the SUMP. Of all the different actors who had contributed, the input from political parties was low, at only 1%. In addition, several government departments and local authorities also provided their insights on the direction of Dublin's mobility strategy. This group of actors accounted for 7% of the total amount of input, a significant share.

Policy diffusion is present in the Irish capital; the city is trying to bring economic gain with its mobility policy. Dublin sees itself as a gateway between the EU and the rest of the world. The city hopes to compete with major European cities by obtaining this key status, which should ultimately bring economic prosperity. This position is considered necessary by the city and the national government, as it has become a national priority.

In the field of learning, Dublin relies on reports about its city's mobility status to create its SUMP, and policies for corridors are developed through collaboration with local authorities. The learning mechanism is present only within local authorities.

Table 5.6: Social & Political Factors Dublin

	Political	Coercion	Competition	Copying	Learning
Dublin	1	0	3	0	5

Additional factors

Dublin City aims to transition to sustainable mobility, as shown in Table 5.7, for economic, social and cultural, and climate change reasons. The SUMP serves this dual purpose, with efficient and sustainable movement of people and goods. Dublin acknowledges the need for a more radical approach towards sustainability in the mobility sectors, promoted by international agreements and pressure from the EU. The Green Deal is not mentioned as it was not available during the drafting of the SUMP in 2016.

In socialisation, it was mentioned that the Dublin municipality included different actors in the process when creating its mobility plan. It was expressed in public opinion that their desire is for public transportation to run reliably and on time. Dublin City responded to this directly in its SUMP by including this as a primary target.

Conditions were imposed by the Irish Health Department that had to be included in the mobility strategy. For example, the city had to invest more in walking and cycling networks to increase the share of these forms of transportation. In addition, the municipality had to comply with national legislation regarding the city's accessibility by train from other parts of the Irish island. The direct consequences are a cleaner city and a healthier population.

Table 5.7: Additional factors Dublin

	Motivation	Socialisation	Vertical
Dublin	7	5	2

5.3 Prague

Prague has developed a 50-page mobilisation plan for 2030, which involves both the city and the Bohemia region in its implementation (Poland Prahu, 2019).

Internal Material Factors

Financial resources and obstacles are identified as the most significant material factors in Prague's mobility plan, as shown below in Table 5.8. The city recognizes the need for significant investment in sustainable mobility, with transport already accounting for 35% to 40% of the annual municipal budget.

By comparison, the other large city in this study, Stockholm, announced in its 2021 annual report that the budget for public transport was 9.7% of the total budget (Region Stockholm, 2021). The SUMP of Prague outlines measures to generate more revenue, such as increasing taxes on car use and reinvesting in green mobility to increase transport revenues from 4.6% to 6.6%. The plan is detailed in Appendix I, ensuring its realism by only including policies for which the municipality has secure financial resources.

Obstacles

The SUMP highlights various obstacles that Prague faces in achieving its sustainable mobility goals, including the need for more financial resources and a more competent municipal workforce. As a result, the city acknowledges that its transport system is weak, and the under-skilled municipality presents challenges in transitioning to sustainable mobility. To tackle this problem, the city prepared a SWOT analysis that included the legislative aspect of the policy provisions. The Prague SUMP includes the legal framework whenever the policy document tackles a new section.

Table 5.8: Material Factors Prague

	Material	**Financial**	**Legal**	**Obstacles**
Prague	1	10	5	8

External Social & Political Factors

Prague's analysis of mobility policy identifies only “generic” political factors as mechanisms of policy transfer, as shown in Table 5.9. The SUMP involved multiple actors from the beginning, including professionals, experts from public organizations, and the local population, who were reached through surveys, panels, discussions, and workshops.

In terms of competition, the municipality is attempting to derive economic benefits from their policies. Gaining this economic benefit is done by allowing more competition in the city. Allowing more competition in the city makes it easier for companies to obtain permits to operate (shared) public transportation in the city. This competition should eventually reduce the price for consumers in public transport. The city has applied the mechanism of "learning" minimally. The SUMP published by the city indicates that there is still a long way to go before the city can refer to itself as a sustainable mobility urban city. The city has compared itself with other European cities to rank itself and learn from this ranking. As a result, the municipality paints a critical self-image and indicates that the current mobility state is inadequate.

Figure 5.9: Social & Political Factors Prague

	Political	Coercion	Competition	Copying	Learning
Prague	3	0	2	0	2

Additional factors

Prague's SUMP identifies several driving forces behind the municipality's transition to sustainable mobility, as shown in Table 5.10. The city is obliged to prepare a SUMP to keep claiming funds from the EU, but there is no emphasis on specific targets set by the EC. Transportation policy is also a priority for the city council due to the poor state of public transport and traffic congestion in Prague.

Prague City Council explicitly mentions in its policy document that residents and visitors to Prague have input into the mobility plan. The downside of this is that the desires of these actors do not directly correspond to targets for sustainable mobility. This drawback is recognised in the SUMP, but the city considers the importance of residents and tourists higher.

The vertical policy transfer reflected in the policy document concerns the Czech Republic's national train network. The Czech government has determined that Prague should increase its efforts to ensure that people outside Prague and city residents can reach each other via high-speed lines.

Table 5.10: Additional factors Prague

	Motivation	Socialisation	Vertical
Prague	6	3	1

5.4 Stockholm

The oldest mobility plan discussed in this study is Stockholm's 72-page SUMP from 2012, which outlines the city's future for 2030 (The City of Stockholm Traffic Administration, 2012).

Internal Material Factors

The Stockholm SUMP's focus on non-material factors, particularly the liberalization of the public transport market and the need to improve travel reliability in response to pressure from the business community, stands out as a key conclusion from the analysis, as indicated in Table 5.11.

The SUMP of Stockholm does not discuss the financial and legal frameworks, except for the congestion tax, which charges car users when entering and leaving the city. The amount of this tax is determined based on when the vehicle enters or leaves the city. As a result, this means that a commuter who drives during rush hour every day must pay more than someone who drives outside rush hour. Cameras record the licence plates, and a bill falls on the car driver's doormat every month. The aim is to reduce congestion in Stockholm's city centre and reduce car use. However, the SUMP also cites this tool to raise more funding for the city.

Obstacles

The main obstacle highlighted by Stockholm in their SUMP is the transport demand, which the city argues is impossible to meet by having all vehicles available in the city centre. For example, streets in this sample need to be forty-five metres wide, including green amenities to meet all modern demands. In a few cases, Stockholm streets are a maximum of thirty metres wide. The municipality thus establishes that desires need to be defined differently. Transport should be realised with the city's construction rather than the other way around. As another obstacle, the municipality stated that the city is built on fourteen islands, which is not conducive to rapid mobility flow. However, the city also acknowledges the character and attractiveness that this geography provides.

Table 5.11: Material Factors Stockholm

	Material	**Financial**	**Legal**	**Obstacles**
Stockholm	3	1	0	5

External Social & Political Factors

Table 5.12 presents a minimal level of all five mechanisms of policy diffusion in Stockholm's SUMP. Regarding political factors, the city has reached a deal with the Swedish government to set clear targets for constructing new transport routes and their deadlines.

Focussing on the competition mechanism, the city of Stockholm aims to be an example for others and eventually be the city where its residents use public transport the most. As a technological innovation mobility city, the city should be a model for other cities.

Regarding the copying and learning mechanism, the city is looking at examples from similar SUMPs to tackle its parking problem, with inspiration from cities in North America and Europe. Furthermore, Stockholm is trying to roll out a transport network as a model for other cities. The spread of this policy would inspire other cities to transition towards sustainable mobility.

Table 5.12: Social & Political Factors Stockholm

	Political	**Coercion**	**Competition**	**Copying**	**Learning**
Stockholm	2	4	3	3	6

Additional factors

Table 5.13 shows the various motivating factors behind the creation of the Stockholm Mobility Plan. One of the main reasons cited by the city is the need for mobility to grow in line with the city's economic development, while also recognizing that there are limitations to the city's expansion in terms of mobility. Instead of solely focusing on transporting vehicles, the city aims to prioritise the movement of people and goods. With a projected regional population growth of 25% by 2030, a robust mobility plan

is needed to ensure efficient transportation for all. Another part of the motivational reasons given by the city is to reduce greenhouse gas emissions from the mobility sector. Stockholm's current (2012) traffic is too polluting, noisy and contributes too many greenhouse gases. Therefore, the mobility sector needs to adopt sustainable practices to combat these environmental issues. The City of Stockholm's overall vision for 2030, as depicted in Appendix J, reflects these goals.

Stockholm Municipality has an open vision toward public opinion within the city. The city of Stockholm sees itself as one that invests generously in transportation to get its citizens from place A to B quickly. While the city invests significantly in transportation infrastructure to enable speeding travel for its residents, it recognizes that there will always be challenges to address.

Table 5.13: Additional factors Stockholm

	Motivation	**Socialisation**	**Vertical**
Stockholm	8	3	3

5.5 Eindhoven

The municipality of Eindhoven has developed an extensive mobility plan that outlines its long-term objectives for the year 2040 (Gemeente Eindhoven, 2013). The plan, which was drafted in 2013, spans eighty-four pages and is built on three main pillars: versatile city, steer & innovate and organise. A visual representation of these pillars is included in Appendix K.

Internal Material Factors

Table 5.14 shows the material factors present in Eindhoven's SUMP for policy adoption. The mobility strategy of Eindhoven is rooted in the city's history, dating back to the Middle Ages. A detailed profile of each neighbourhood's characteristics is created to customize mobility planning. For this customisation, sub-studies are utilized to map mobility in each neighbourhood. In addition, "The Natural Step" framework is applied to develop and implement new mobility choices based on raw materials, chemicals, natural systems and human needs.

The Financial aspect of the SUMP is briefly outlined in the policy document, with emphasis on public-private partnerships to support the desired plans. Additionally, the SUMP's appendix discusses relevant laws and regulations related to national traffic and transport legislation, guiding how to apply such laws in Eindhoven.

Obstacles

The new mobility strategy in Eindhoven's SUMP faces several challenges as identified by the municipality. First, the city centre is expanding rapidly and becoming overcrowded, resulting in a significant amount of traffic that has no origin or destination within the city centre. This heavy traffic

flow causes inconvenience and increases the risk of accidents in the already busy city centre. Second, the energy demand is increasing; in 2012, traffic in Eindhoven was responsible for 20% of the city's total energy consumption. Furthermore, traffic contributed 27% of the total greenhouse gas emissions in the same year, leading to a decline in air quality.

Table 5.14: Material Factors Eindhoven

	Material	**Financial**	**Legal**	**Obstacles**
Eindhoven	5	3	2	7

External Social & Political Factors

The policy plan of Eindhoven emphasises competition and learning mechanisms, while other mechanisms of policy diffusion are underrepresented, as shown in Table 5.15. Eindhoven is located in the Brainport region, which is striving to become a leading knowledge and innovation hub in Europe. This region has been designated as critical for the national economy by the Dutch government in 2014 and currently producing innovative policies on mobility, falling under the "steer and innovate" pillar. Eindhoven is leveraging its favourable location climate to attract more knowledge and innovation to the city, ultimately leading to the diffusion of European mobility policy.

Eindhoven has adopted the Trias Mobilica as the basis for its mobility policy, demonstrating its propensity for copying conduct. This policy emphasises three essential aspects of sustainable mobility: preventing trips, changing means of transport and changing transport itself, leading to positive effects on the climate, energy savings, and accelerating the transition to sustainable mobility.

The Brainport region also serves as a leading mechanism for Eindhoven, with numerous institutions and companies exchanging knowledge with the municipality, particularly in the field of mobility. The municipality has a directing role in bringing all actors together to speed up the process and views the city as a "laboratory" for evaluating new productivity in practice. Additionally, the collaborates with event organisers in the region to identify mobility problems around large events, propose solutions and implement them.

Table 5.15: Social & Political Factors Eindhoven

	Political	**Coercion**	**Competition**	**Copying**	**Learning**
Eindhoven	0	0	4	1	4

Additional Factors

Table 5.16 shows multiple motivational reasons that drive Eindhoven’s mobility strategy, including vertical policy transfer. The city’s focus is on sustainability and accessibility, with a preference for walkers and cyclists. The SUMP prioritizes slower modes of transport to move quickly in the city. Eindhoven’s last mobility strategy dates back to 1999, and the city aims to become energy-neutral by

2045, necessitating a transition to sustainable mobility. While the Green Deal has not yet played a part, Eindhoven's sustainability principles have been derived from the European Quest project.

To increase social cohesion and garner public support, the municipality is putting effort into creating more attractive spaces for meetings and relaxation in its SUMP. It has also set up a platform to involve people from within the city in its mobility plans; focusing solely on the city level.

Vertical policy transfer emerges because Eindhoven has a municipal duty of care for its citizens' mobility; as stipulated by national legislation. This duty is reinforced by environmental impact reports from the national government, urging the municipality to limit climate effects in the city. European laws and regulations require the city to meet air quality standards by 2015, which it still needs to achieve, prompting the city to invest in meeting this goal.

Table 5.16: Additional Factors Eindhoven

	Motivation	**Socialisation**	**Vertical**
Eindhoven	7	5	3

5.6 Lisbon

Lisbon's strategic mobility plan outlines its vision for 2030 and is, a 37-page narrative document (Municipal de Lisboa, 2020). The strategic pillars for the plan can be found in Appendix L.

Internal Material Factors

Table 5.17 indicates an even distribution of non-financial and financial factors in Lisbon's SUMP. The plan mainly reflects material factors related to policy determination, with a focus on software and digitalisation. To transition to more sustainable mobility, Lisbon is developing practical management tools and information systems, including the Lisbon Management Platform.

In the SUMP, a separate section is devoted to the financial justification of the measures needed to transition to sustainable mobility. The focus of this justification document is that the polluter must pay, and unsustainable modes of transportation are taxed more heavily. This method of taxation could include increasing parking fees. The additional revenue generated by the municipality should then go to projects identified in advance in the SUMP.

In legislation and regulation, the Lisbon Mobility Plan briefly addresses this aspect. A small paragraph describes the legislation to be worked on in the city. No concrete goals and/or deadlines are set here. For example, the City of Lisbon proposes to review the regulations of electric vehicles in the city; this is only mentioned in the keywords.

Obstacles

The policy document acknowledges obstacles to transitioning to sustainable mobility in Lisbon, including the high percentage of trips made by car (47%) in 2017, despite 73 % of roads being flat or gently sloping. The high car use is instead blamed on the high private ownership of cars that many of the city's residents have. It is less attractive for people to take public transportation; one of the reasons is that public transportation is not well connected, making it not compelling enough for most people to take this form of transportation.

Table 5.17: Material Factors Lisbon

	Material	**Financial**	**Legal**	**Obstacles**
Lisbon	4	4	1	4

External Social & Political Factors

The learning mechanism in policy diffusion occurs in the Lisbon SUMP, while the other mechanisms are hardly present, as shown in Table 5.18. The political factor in Lisbon's mobility plan is found in the fact that different parties have worked together to boost public transport in the city. The signal came from the national government of Portugal that the city of Lisbon needed to invest more in public transportation. Together with this government, the Metropolitan Region of Lisbon and the city council jointly drew up a policy plan for this.

Lisbon, as a city, intends to increase its commitment to shareable transportation. To do this, the city looked around at other cities to see how they were pulling it off. After all, shared transport also has negative aspects, such as being a nuisance in the neighbourhood. By considering other cities' experiences, the city adopted a policy to encourage shared transport services.

The city of Lisbon uses the mechanism of learning in diverse ways. Thus, the first step is to look within the country to see how other cities tackle problems. In the case of Lisbon, the focus is then mainly on Porto as another major city. The city also collaborates with other surrounding municipalities for better mobility coordination between the two areas. As a result, innovative ideas and projects should quickly cross city boundaries so that learning from each other can take place. The city further aims to be a forerunner in promoting urban electric cars and also to spread this policy. In addition, in 2017, only 0.6% of transportation in the city was by bicycle. Lisbon looks at this after other cities and sees that bicycle economies are present. This working method has made investing in a bicycle network a priority for the city.

Table 5.18: Social & Political Factors Lisbon

	Political	**Coercion**	**Competition**	**Copying**	**Learning**
Lisbon	1	0	0	1	9

Additional factors

Table 5.19 indicates a prominent level of motivation in Lisbon to initiate the transition towards sustainable mobility. The city's SUMP recognizes that 70% of the fight against climate change takes place in big cities, and cites the Green Capital treaties and the 2020 Covenant of Mayors to reinforce this perspective. The plan builds on previous mobilisation strategies and aims to make mobility accessible and available to everyone, with a particular focus on improving the public transportation network to attract more tourists. Lisbon aspires to become the European Capital of Mobility by 2030, following its achievement of the European Green Capital status in 2020. In addition to environmental benefits, there is also a financial incentive for the transition, as the city can claim more funds from the EU by committing to innovative green mobility. To promote sustainable mobility, the city is addressing public opinion and encouraging businesses to invest in this sector, emphasizing the rational benefits and natural state of affairs.

Table 5.19: Additional factors Lisbon

	Motivation	**Socialisation**	**Vertical**
Lisbon	11	2	0

VI Comparison

This chapter examines and compares the different cities based on three components: material resources, social & political factors and additional factors. The results of all codes coded for this study of the different SUMPs are presented in Table 6.1, and a figure of the trend between the differences in the numbers of the mechanisms can be found in Appendix M. Table 6.1 confirms H1 (internal factors) for all cities with high and medium levels of policy adoption, as their SUMPs contain many codes related to material factors. Additionally, as described earlier, H2 can be partially confirmed (external factors). Social and political factors are equally present among the chosen cities, but this does not directly result in the level of policy adoption for these cities.

Table 6.1 Comparison Policy Transfer Different Cities

Mechanisms	**Ghent**	**Dublin**	**Prague**	**Stockholm**	**Eindhoven**	**Lisbon**	***Total***
Material	8	4	1	3	5	4	**25**
Financial	1	7	10	1	3	4	**26**
Legal	1	9	5	0	2	1	**18**
Obstacles	14	6	8	5	7	4	**44**
Political	0	1	3	2	0	1	**7**
Coercion	0	0	0	4	0	0	**4**
Competition	3	3	2	3	4	0	**15**
Copying	0	0	0	3	1	1	**5**
Learning	11	5	2	6	4	9	**37**
Motivation	10	7	6	8	7	11	**49**
Socialisation	4	5	3	3	5	2	**22**
Vertical	6	2	1	3	3	0	**15**
Total	**58**	**49**	**41**	**41**	**41**	**37**	**267**

Internal Material Factors

Table 6.2 shows a similar ratio of non-financial to financial factors. For material factors, studies done in or outsourced by different cities are a way of adopting policies. Older policy documents also serve as a guide for the new mobility policy to be promulgated.

However, cities have different financial approaches. The study shows that Prague and Dublin are the only cities that mention in their SUMP that the transition to sustainable mobility is financially challenging. For this, the cities have their own policy plans to close this financial gap in the budget. Eindhoven and Lisbon briefly mention how additional financial flows can be generated and who is responsible, but they need to elaborate on this. Stockholm and Ghent barely allow a financial paragraph in their mobility plans, so this does not play a role for them in this regard.

Legal adherence is discussed in most SUMPs, with Dublin elaborating on its role as a leading authority in complying with laws and regulations.

Obstacles

Table 6.2 reveals that all cities face obstacles in transitioning to sustainable mobility, with a trend showing that longer SUMPs indicate more obstacles. A general trend that emerges across all cities is that the cities did not have an up-to-date mobility plan before the current one was drawn up. As a result, the cities were lagging behind. Prague and Dublin show in their SUMP that municipalities lack the financial resources to engage in the transition entirely. The will exists among these cities, but the resources still need to be. Ghent, Stockholm, Eindhoven, and Lisbon also mention that their cities are

built and designed so that this hampers a transition to sustainable mobility, making the process take longer compared to other cities. For instance, in Stockholm, the streets are not wide enough, and Lisbon is built on several hills.

Table 6.2: Material Factors All Cities

Internal Factors	**Ghent**	**Dublin**	**Prague**	**Stockholm**	**Eindhoven**	**Lisbon**	***Total***
Material	8	4	1	3	5	4	**25**
Financial	1	7	10	1	3	4	**26**
Legal	1	9	5	0	2	1	**18**
Obstacles	14	6	8	5	7	4	**44**
Total	24	26	24	9	17	13	**113**

External Social & Political Factors

Table 6.3 shows competition and learning as the most common mechanism in the mobility documents of the cities analysed, with political factors and coercion rarely mentioned. Prague values stakeholder engagement, while Stockholm only employs coercion due to national requirements. Competition on policy transfer is present in all cities except for Lisbon, with Eindhoven having the most competitive mechanisms due to its focus on innovation. Ghent seeks economic benefits through revitalizing industrial sites. The copying mechanism only arose several times in Stockholm, where identical parking policies from other cities were applied to Stockholm cases. In Ghent, this proposal was also there but had yet to be realised when the SUMP was drafted. Learning mechanisms are present in all SUMPs, with cities comparing themselves to others and aiming to be forerunners and examples for sustainable mobility. Prague notes that much work needs to be done in its city before it can truly call itself a sustainable mobility city. The city looks at this and ranks itself against other European cities, establishing room for progression. Stockholm, Eindhoven and Ghent also seek to be forerunners regarding their plan for sustainable mobility. Their mobility policies should be a guide for other cities that are starting, have started or are in a different phase of the transition to sustainable mobility. Eindhoven wants to spread knowledge and innovation regarding mobility policy with the smart region Brainport. Lisbon and Ghent apply learning mechanisms at different geographical levels such as the regional, national, and European levels.

Table 6.3: Social & Political Factors All Cities

External Factors	**Ghent**	**Dublin**	**Prague**	**Stockholm**	**Eindhoven**	**Lisbon**	***Total***
Political	0	1	3	2	0	1	**7**
Coercion	0	0	0	4	0	0	**4**
Competition	3	3	2	3	4	0	**15**
Copying	0	0	0	3	1	1	**5**
Learning	11	5	2	6	4	9	**37**
Total	14	9	7	18	9	11	**68**

Additional Factors

In Table 6.4, all cities transitioning to sustainable mobility as a motivation for drafting their SUMPs. Prague and Lisbon also reference the Green Deal and associated policy measures, which were adopted after the drafting of their policy documents. Stockholm and Ghent anticipate population growth, making sustainable mobility a necessity. Additionally, all cities aim to increase the share of pedestrians, cyclists and public transport in daily movements compared to car users.

To socialize the transition to sustainable mobility, all cities seek to involve local communities and incentivise them to adopt greener transportation options. For example, Ghent offers free public transport to children aged 6 to 14.

Vertical policy transfer occurs in several cities, including Ghent, Dublin, Stockholm and Eindhoven. At the national level, environmental legislation is imposed on cities to promote climate-friendly practices such as limiting greenhouse gas emissions. Ghent's administrative division requires cooperation at the national, regional and local levels.

Table 6.4: Additional Factors All Cities

Additional Factors	**Ghent**	**Dublin**	**Prague**	**Stockholm**	**Eindhoven**	**Lisbon**	***Total***
Motivation	10	7	6	8	7	11	**49**
Socialisation	4	5	3	3	5	2	**22**
Vertical	6	2	1	3	3	0	**15**
Total	20	14	10	14	15	13	**86**

Summary & Counterargumentation

Table 6.5 indicates that internal factors are the most common for policy adoption in the examined SUMPs. While this section provides several reasons why cities prepared mobility policy documents, it does not directly address the central question. The following chapter will address to what extent European cities use policy adoption and transfer to achieve mobility targets outlined in the Green Deal.

Table 6.5: All Mechanisms All Cities

All Mechanisms	**All Cities**
Material Factors (H1)	113
Social & Political Factors (H2)	68
Additional Factors	86
Total	267

The results of the various SUMPs also reveal counterarguments. First, market forces in public transport. Prague's SUMP explicitly mentions that the city wants to allow different transport providers onto the city's public transport network. The other SUMPs do not explicitly mention this but do mention market forces. Market forces for public transport are balanced at a regional level where tendering is fixed for a longer period. On long-distance routes, it is important both nationally and internationally that a reliable carrier transports passengers. Tenders and concessions for routes should be set on a long-term basis where transport companies have a duty to their passengers. In the event that long-distance routes are fully privatised, transport companies may go out of business by losing their concessions (Heijne, 2018). Ultimately, this results in market competition with transport companies offering passengers a minimum unreliable service at the expense of sustainable mobility. Privatisation at a local level is an acceptable solution to keep service and prices low for travellers, this is not the case for long-distance routes.

As a second counterargument that can be named is the achievability and ambition level of the targets set by the six cities. Concrete targets have emerged from the Green Deal for the mobility sector. For instance, thirty million vehicles should be emission-free by 2030 and zero vehicles by 2050. In addition, collective transport under five hundred kilometres must be carbon-free by 2030 and rail traffic on high-speed lines must double by 2030 and triple by 2050 (European Commission, 2019). These ambitious targets from the EC can be measured through critical performance indicators. Whereas the EC is clear on which direction it wants to go regarding mobility, cities remain flat in their mobility plans. The mobility plans provide a direction in which cities want to move forward, a sustainable mobility transition. However, it is unclear when the cities will draw up a new SUMP, which concrete targets will be set and how this progress will be measured. If this is not concretised, a new author may redo this study in a decade with the same conclusion that cities have not drawn up a SUMP for a lengthy period and a SUMP with too few critical performance indicators.

VII Conclusion

The research revealed that material factors are more prevalent in the adoption of mobility policies in various European cities. This thesis has contributed to the identification of the mechanisms that significantly contribute to the adoption and transfer of mobility policies towards meeting the mobility objectives of the Green Deal in European cities. The findings indicate that financial resources are crucial in this process, thus confirming H1 and establishing a causal relationship between material factors and the adoption of mobility policies.

This thesis aimed to answer the following research question: *''Against the backdrop of the European Union's Green Deal, to what extent do policy adoption and policy transfer explain urban sustainable mobility policy measures in the EU?''* Two hypotheses were drawn up for this research question; **H1**: European cities have a greater adoption of sustainable mobility policies when more material resources are available, and **H2**: Social and political factors are positively associated with greater use of policy transfer in sustainable mobility policy. Ultimately, the study's results confirm the first hypothesis, while the second hypothesis can be partially confirmed.

The mobility policy documents of all cities reflect a strong motivation, urgency, and drive to transition towards sustainable mobility. The EC's Green Deal, endorsed in 2019, included mobility-focused targets. However, in four of the six cities studied (Ghent, Dublin, Stockholm and Eindhoven), the need for sustainable mobility was already recognized prior to the endorsement of the Green Deal. The main reason cited by these cities is the need to combat climate change, with sustainable mobility being a top priority due to the sectors' responsibility for 26% of total greenhouse gas emissions in the EU. Additionally, each city has its unique reasons based on factors such as geography, city layout, and national legislation to adopt sustainable mobility. The study examines the extent to which material, social and political factors influence the adoption and diffusion of mobility policies in the six chosen cities, including Ghent, Dublin, Prague, Stockholm, Eindhoven and Lisbon.

The study examined the positive relationship between internal factors and the adoption of sustainable mobility policies (H1). Non-financial resources, such as self-initiated or external studies, were used by the selected cities to understand their mobility situation. Financial resources are crucial for conducting these studies and adopting and diffusing sustainable mobility policies. All cities expressed a fervent desire to transition to sustainable mobility but faced unique obstacles to their city as well as common obstacles, such as a lack of financial resources. To finance this transition, cities need to generate revenue without burdening their residents. The study suggests increasing indirect taxes as a potential solution, while Prague and Lisbon utilize EU funds for this purpose.

Besides the internal factors, the influence of social and political factors (external) on the use of policy transfer of mobility policies was also examined (H2); this relationship is less strong than for the material factors. Several policy transfer mechanisms were examined to identify the social and political factors. The mechanisms of coercion and copying hardly appear in the different policy documents of the cities. In the SUMPs, coercion barely occurs; in many cases, there is much cooperation between these

higher bodies and the cities. Copying does not arise because this mostly turns into the mechanism of learning. Cities use policy learning in their mobility policies by looking at other cities and how they approach and solve complex problems. When looking at other European cities, policies are not blindly copied. However, it is analysed how a city tackles a problem, and this problem-solving is tailored to the specific city. The mechanism of competition can be found in all cities except Lisbon. Usually, this form of competition indicates internal competition by creating the best possible mobility environment in one's city for transporters, residents, and climate. Only Dublin hopes to establish itself as the gateway to Europe and benefit economically. Political factors had a negligible effect on policy drafting, and avoidance of blame was not observed.

The study highlights the significant influence of internal factors (H1) on the adoption of sustainable mobility policies in EU cities. Material resources, especially financial ones, are the key factor in policy adoption. While the Green Deal targets act as a driver, they are not as crucial as the cities' available financial resources. Most cities conduct studies to analyse their mobility sector, which helps them progress in this area. The role of policy transfer mechanisms (H2) is relatively minor, with cities primarily relying on policy learning to adapt policies implemented in other cities to their own conduct. While policy transfer mechanisms do not directly contribute to policy adoption, they are present in all cities' SUMPs; partially confirming H2.

Based on this conclusion, it is recommended that the EU should allocate more funds to member state cities to increase their material resources and enhance policy adoption of sustainable mobility policies. By implementing these policy adjustments, the EU can achieve its Green Deal goals on mobility, as described in chapter two. Furthermore, it is critical for cities to update their mobility plans regularly to meet the targets set by the Green Deal. Additionally, it is crucial for European cities to exchange information and ideas on mobility with each other, and an interactive dashboard could facilitate this. More suggestions for future research are discussed in the section ''Suggestions for Future Research''.

This conclusion results in the following three policy recommendations for the EC:

- Invest with funding in cities of member states to initiate the transition to sustainable mobility policies
- Set a 5-year renewal period for SUMPs so that cities keep mobility plans up to date
- Create a European dashboard tool, making it easier for cities to apply policy transfer between themselves

Limitations

This study has some limits that need to be considered. First, the number of cases in this study was limited to six cities. In the scope of this study, this is the maximum number of cities that could be studied. It was chosen to take cities of varied sizes to achieve a proportionate picture. Nevertheless, due to the language barrier, it was not possible to choose cities whose SUMP is not available in a language the researcher is proficient in. This linguistic limitation meant that this study did not include cities in Eastern Europe. Another limitation of this study is that the focus has only been on the policy transfer mechanisms rather than on the results achieved by the different cities. As a result, it has only studied how the cities intend to address the mobility problem rather than how they have achieved results.

Furthermore, the study's financial analysis would benefit from more in-depth research. The findings suggest that financial resources are critical for cities to transition to sustainable mobility. Fortunately, most municipalities publicly disclose their financial annual reports, which provide accessible data for this type of research. Analysing these reports could help identify trends in the allocation of budgetary resources towards mobility initiatives and shed light on the extent to which cities prioritize sustainability in their spending.

The concept of "social sustainability" was not discussed in the thesis, but it is an important aspect to consider in mobility planning. The term is defined by the United Nations (UN) as follows: "Social sustainability is about identifying and managing business impacts, both positive and negative, on people" (Social Sustainability Team, 2023). In the realm of mobility, social sustainability can be applied to any case and level. The availability of various forms of transport is socially desirable, but it may eventually lead to inadequate transportation for a society (Holden et al., 2013). With new technologies in the mobility world, such as smart mobility, it is important to consider their impact on society. Research by Jeekel (2017) suggests that smart mobility can either increase or decrease social cohesion depending on how it is implemented. Policymakers should therefore include social sustainability as a core concept in their mobility plans to ensure that new technologies are used to benefit society.

Suggestions for Future Research

With the results from this thesis and the limits mentioned in this chapter, there are thoughts and suggestions for future research. Suggestions for future research include expanding the number of cases studied to achieve a more comprehensive understanding of policy transfer mechanisms for sustainable mobility in EU cities. Dividing the cities into three population groups and selecting cities from all Member States would provide a complete picture and higher reliability. Additionally, creating a European database for mobility policies could facilitate policy learning and adaptation across the continent.

With the creation of this European database for mobility policies, critical performance indicators can be defined, and an interactive dashboard can be produced. This dashboard would show which cities score well in which mobility areas and, thus, valuable information can be gathered. One factor that plays

a significant role in both project suggestions mentioned above is financial resources. As with the research in this thesis, financial resources are a positive factor in achieving a goal. Therefore, the EC should invest if this becomes a reality.

The well-known phrase "Together you are stronger" can also be applied to this thesis, which mainly focuses on top-down or horizontal processes of policy transfer. However, cities can also contribute to the development of sustainable mobility policies by providing input back towards the EU or through networks such as the Local Governments for Sustainability (ICLEI). ICLEI is a global network that connects over 2,500 local and regional governments worldwide, with the goal of promoting more sustainable urban development (Local Governments for Sustainability, 2022). By joining ICLEI; cities can provide bottom-up feedback to the EC, and participate in the development of sustainable mobility policies on a continental level. It is recommended that Dublin and Prague, two cities absent from this network, consider joining ICLEI.

In addition, it is important to inform young people (up to 24 years old) about climate change and the need for sustainable mobility. This group is concerned about future generations and can be powerful advocates for change (Kelly et al., 2022). However, they are also vulnerable to fake news, which can skew their perception of the issue. Yet, this concern is not only aimed at climate change; this is about all sorts of social questions. Accurate and reliable information is crucial for making informed decisions (Renda, 2018). The EU is actively combating fake news, but it remains to the citizens to make their own choices regarding climate goals.

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Appendix A: Elements of the Green Deal

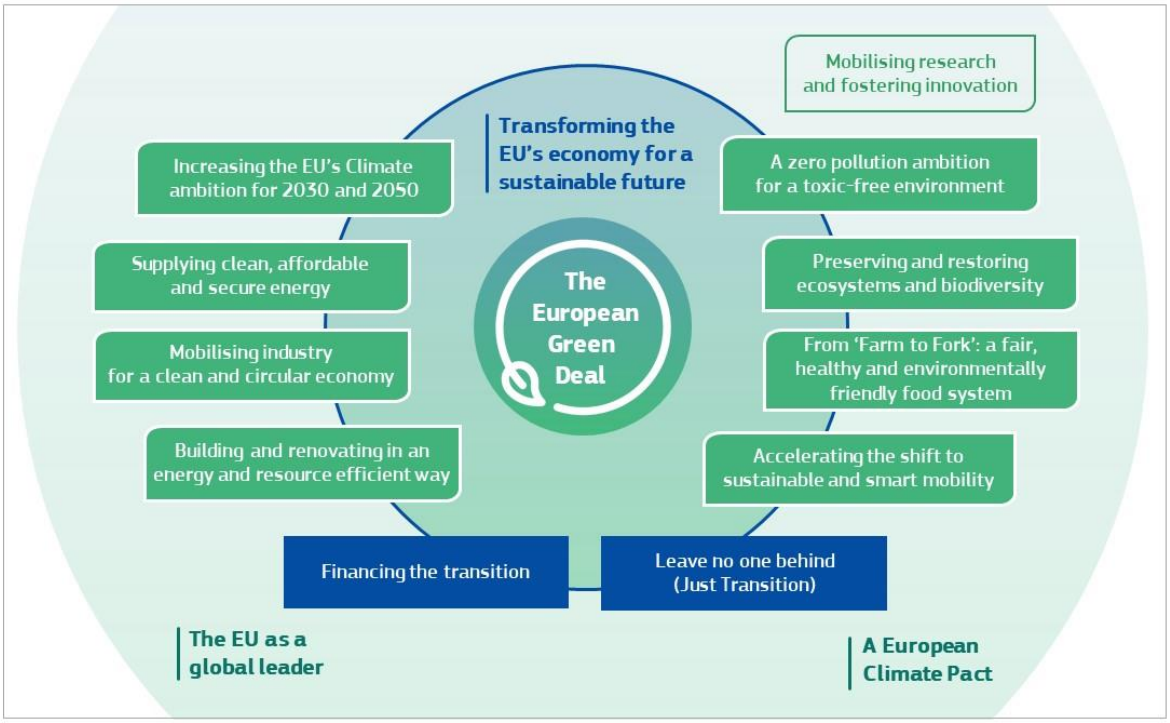


Figure A: The European Green Deal *Source: European Commission (2019)*

Appendix B: Objectives Transport and Mobility Sector

Figure B.1:Objectives Transport and Mobility Sector - Sustainable Mobility *Source: European Commission (2020)*

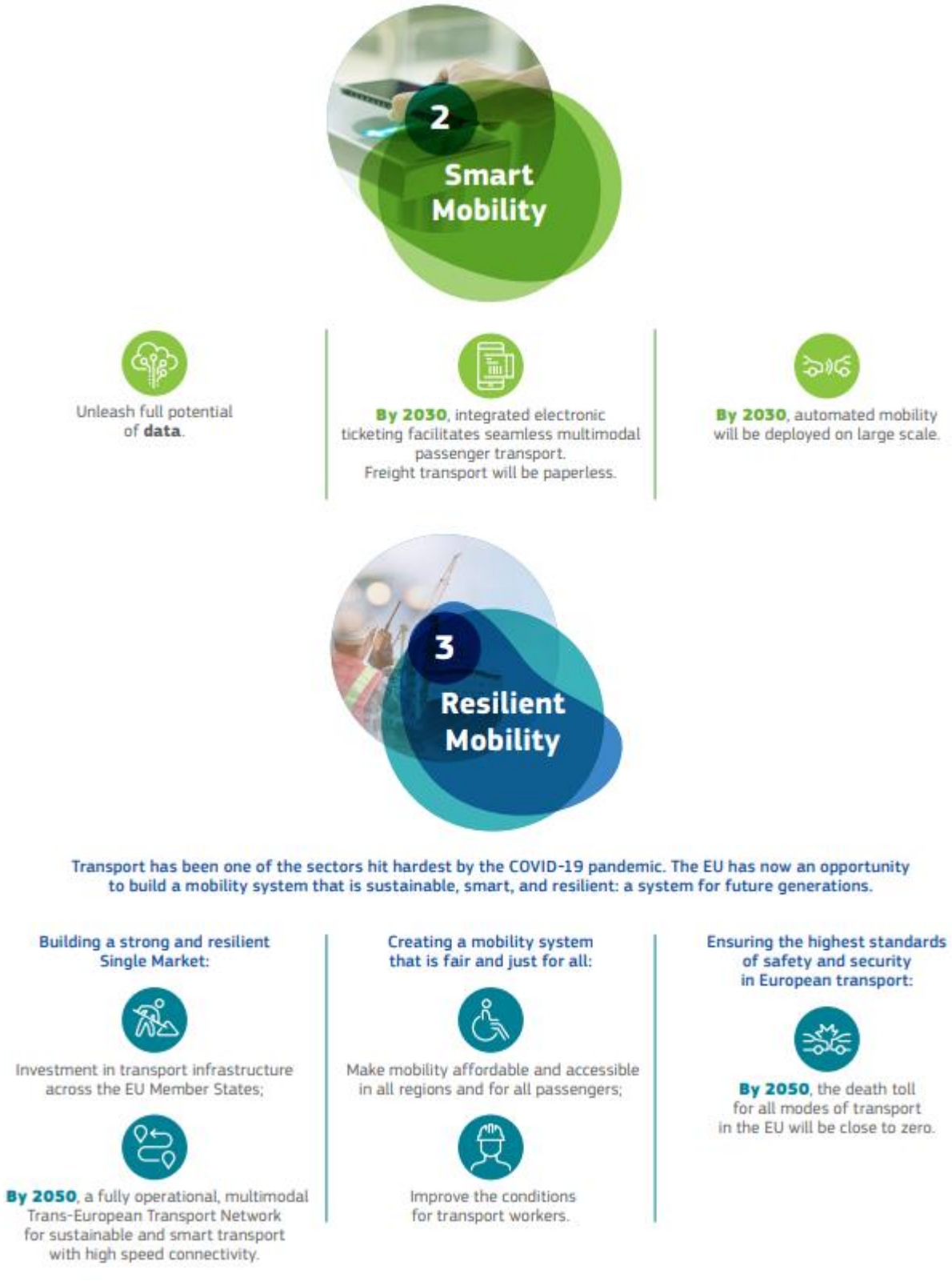


Figure B.2: Objectives Transport and Mobility Sector - Smart- & Resilient Mobility *Source: European Commission (2020)*

Appendix C: European Institutions

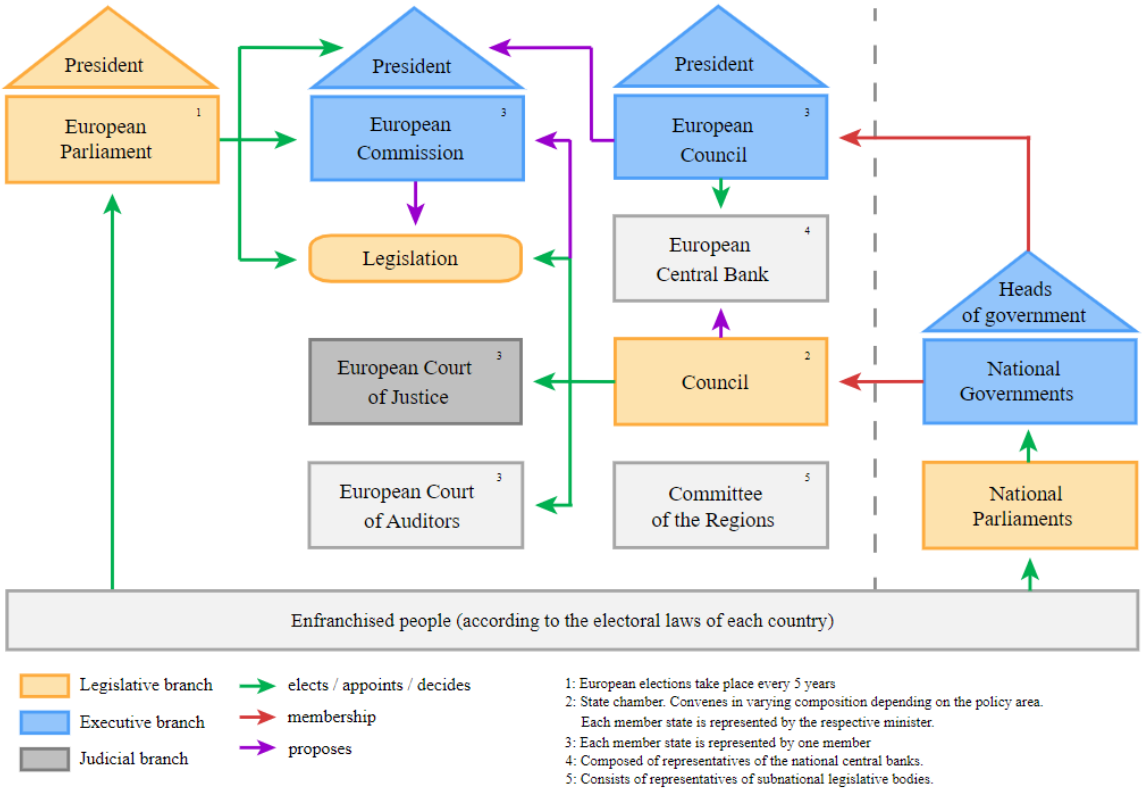


Figure C: Organisational chart European Institutions *Source: Unknown*

Appendix D: The Spatial Dimension of Urban Renewal Policy Transfer

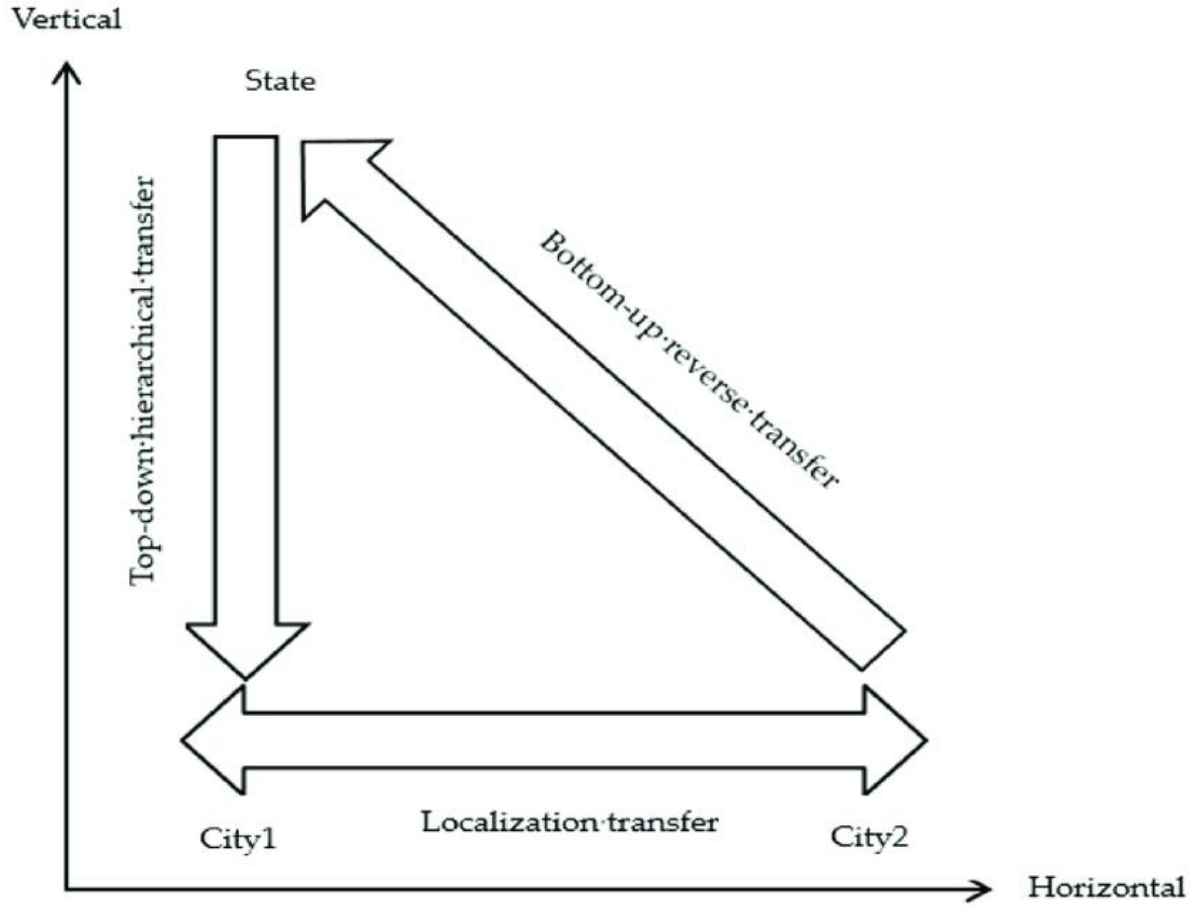


Figure D: The Spatial Dimension of Urban Renewal Policy Transfer *Source: Huang et al., (2023)*

Appendix E: Transferability Algorithm

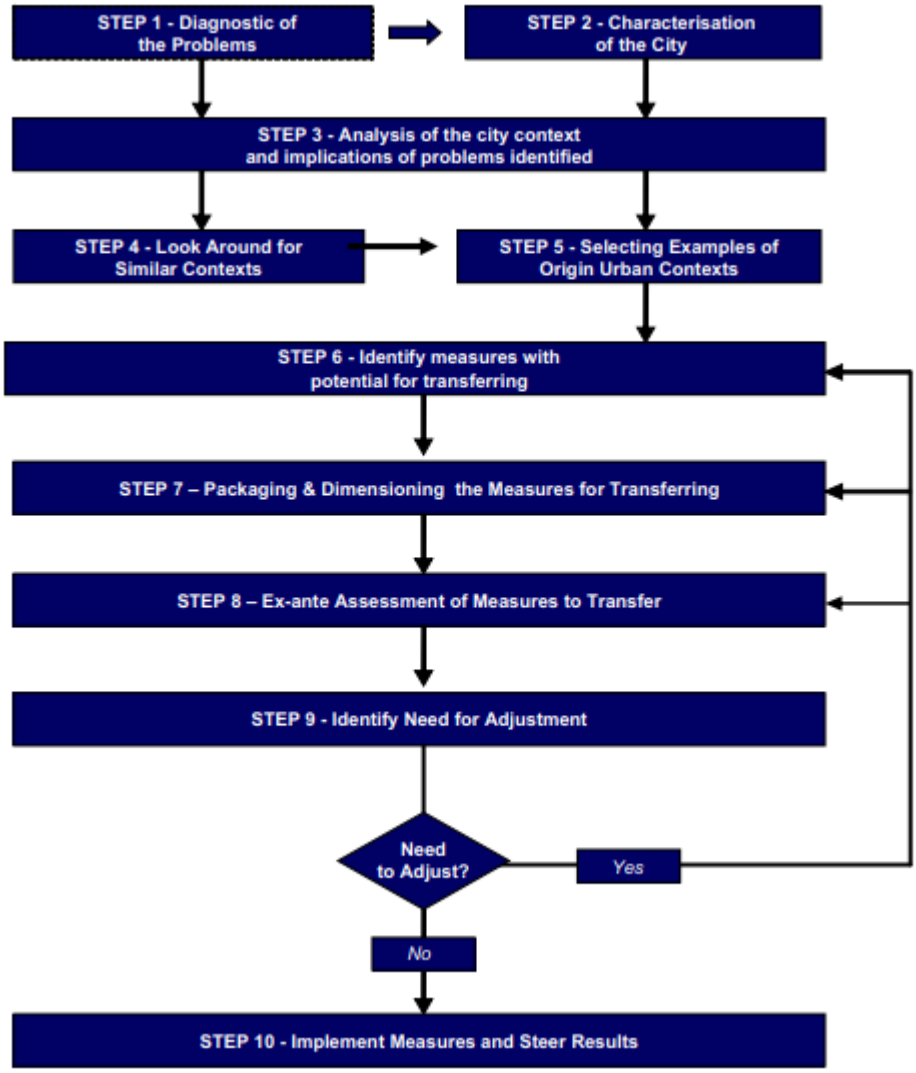


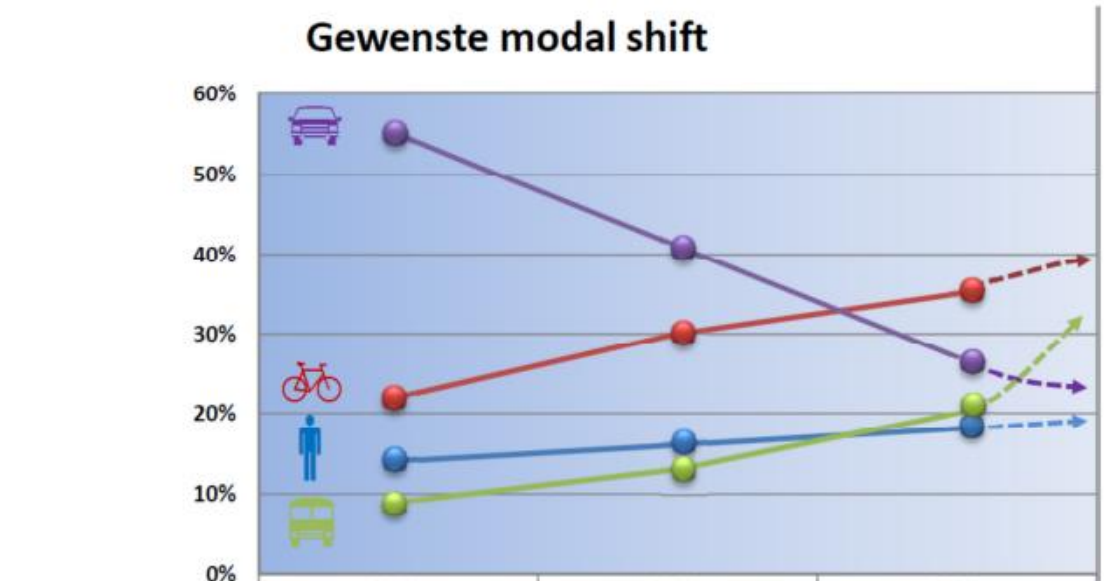
Figure E: Transferability Algorithm *Source: Macário & Marques (2008)*

Appendix F: Differences Between Traditional Transport Planning and Sustainable Urban Mobility Planning

Traditional Transport Planning		Sustainable Urban Mobility Planning
Focus on traffic	→	Focus on **people**
Primary objectives: Traffic flow capacity and speed	→	Primary objectives: **Accessibility** and **quality of life**, including social equity, health and environmental quality, and economic viability
Mode-focussed	→	**Integrated development of all transport modes** and shift towards sustainable mobility
Infrastructure as the main topic	→	**Combination** of infrastructure, market, regulation, information and promotion
Sectoral planning document	→	Planning document **consistent with related policy areas**
Short and medium-term delivery plan	→	Short and medium-term delivery plan embedded in a **long-term vision and strategy**
Covering an administrative area	→	Covering a **functional urban area** based on travel-to-work flows
Domain of traffic engineers	→	**Interdisciplinary** planning teams
Planning by experts	→	Planning with the **involvement of stakeholders and citizens** using a transparent and participatory approach
Limited impact assessment	→	Systematic **evaluation** of impacts to facilitate **learning** and improvement

Figure F: Differences Traditional Transport Planning & SUMP *Source: Eltis (2019)*

Appendix G: Target Modal Shift Ghent



	2012	2020	2030
Stappers	14%	16%	18%
Trappers	22%	30%	35%
Openbaar vervoer	9%	13%	20%
Personenwagens	55%	41%	27%

Figure G: Modal Shift Ghent *Source: Stad Gent (2015)*

Translation

Gewenste modal shift	Desired Modal Shift
Stappers	Pedestrians
Trappers	Cyclists
Openbaar Vervoer	Public Transport
Personenwagens	Passenger cars

Appendix H: Corridors Greater Dublin Area

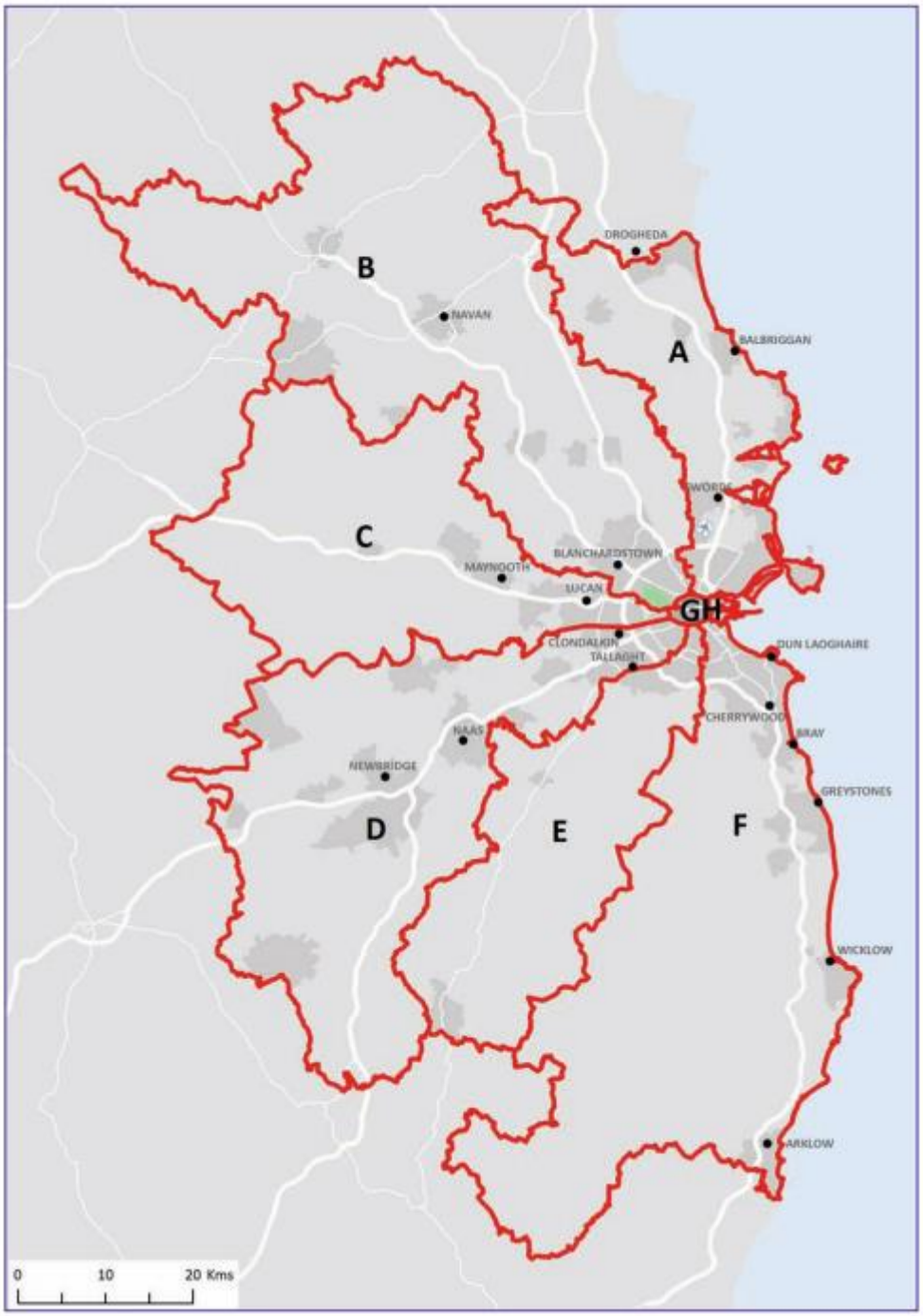


Figure H: Corridors Greater Dublin Area *Source: National Transport Authority (2016)*

Appendix I: Overview of Measurements and Cost SUMP Prague

OVERVIEW OF THE DEVELOPMENT MEASURES OF THE PROPOSAL

Development measures	Number of measures	Investment costs of Prague (CZK million)
Development of railroad network	13	766
Development of metro and tram network	23	50 255
Public transport priority	6	8
Completion of Outer Ring Road	7	346
Completion of Inner Ring Road	5	1 705
New road links	8	1 369
Toll system	2	4 005
City logistics	3	10
P+R and B+R facilities	7	2 801
Integrated mobility services	6	21
Shared mobility services	4	73
Support for utility cycling	12	612
New pedestrian links	8	612
Traffic calming	6	910
Electric buses and private electromobility	7	504
Strengthening public transport	4	95
Campaigns to promote sustainable mobility	5	31
Innovation of city transport administration	8	12
Traffic control	8	620
TOTAL	142	64 755

Figure I: Overview of the Development Measures of the Proposal Prague *Source: Poland Prahu (2019)*

Appendix J: Vision 2030 Stockholm

Figure J: Vision 2030 Stockholm *Source: The City of Stockholm Traffic Administration (2012)*

Appendix K: Key Terms SUMP Eindhoven

Figure K: Key Terms SUMP Eindhoven *Source: Gemeente Eindhoven (2013)*

Appendix L: Strategic Pillars Lisbon

STRATEGIC PILLARS

1. MORE INTEGRATION
To promote integrated mobility solutions on a metropolitan scale, including all transport modes available, and providing one single point of contact for the user.

2. MORE TRUST
To increase reliability, speed, and safety of public transport through measures which reinforce capacity, frequency, capillarity, surveillance, and prioritisation on the roads.

3. MORE CONNECTIVITY
To ensure connected transport with real-time information, encouraging the use and sharing of data, and an integrated management of the network by the municipality on a mobility manager logic.

4. MORE ACCESSIBILITY
To trengthen the accessibility, inclusiveness, convenience, and proximity of the network and of the cost of transport to all, and promoting an integrated, simple, and user-centred experience.

5. MORE INNOVATION
To make Lisbon a pioneering and testing city for innovative mobility solutions in real but controlled environments, generating a positive impact both on the economy and users.

6. MORE RESPONSIBILITY
To make citizens and businesses aware of the modal options and mobility products available, sensitising them to the impact of using private car, promoting alternatives whenever they exist, and developing pedagogical actions which promote the public space and sustainable mobility.

Figure L: Strategic Pillars Lisbon *Source: Municipal de Lisboa (2020)*

Appendix M: Results Policy Transfer Mechanisms

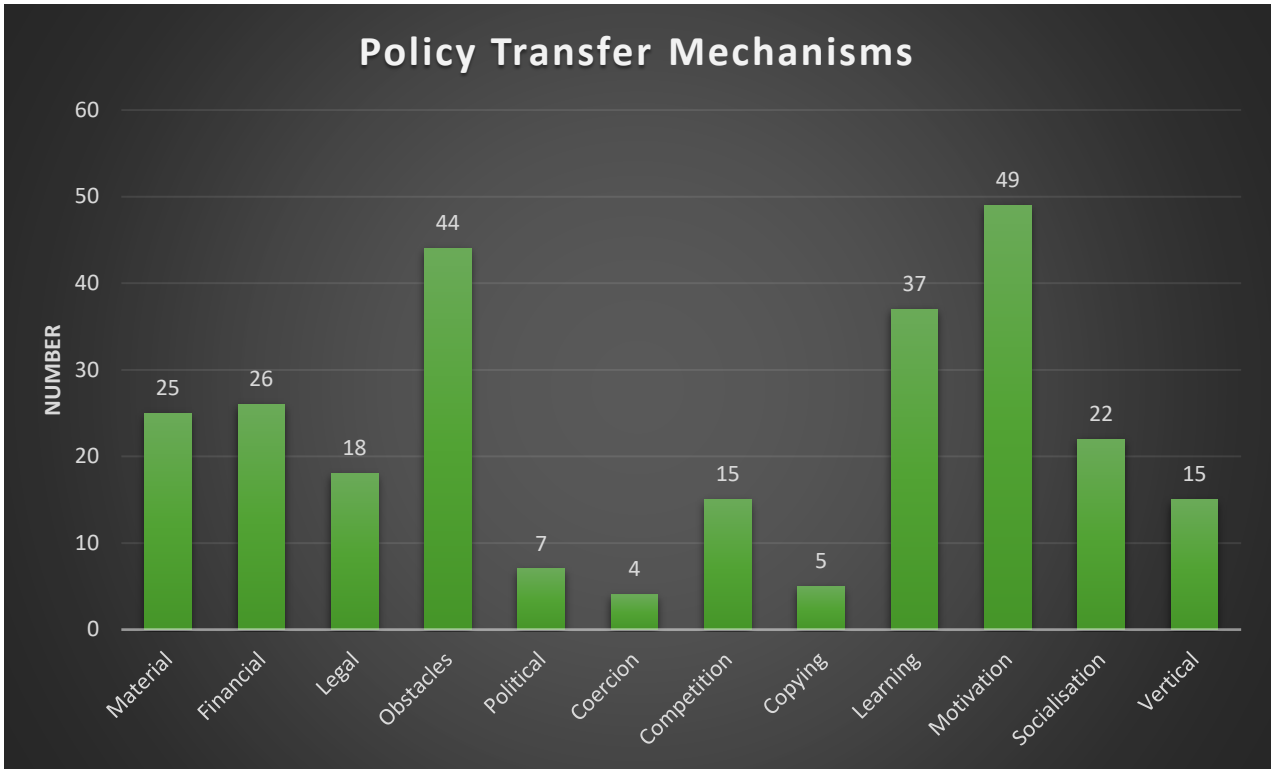


Figure M: Results Policy Transfer Mechanisms