



universität
wien

MASTERARBEIT / MASTER'S THESIS

Titel der Masterarbeit / Title of the Master's Thesis

verfasst von / submitted by

angestrebter akademischer Grad / in partial fulfilment of the requirements for the degree of

Master of Arts (MA)

Wien, / Vienna,

Studienkennzahl lt. Studienblatt /
degree programme code as it appears on
the student record sheet:

A 066 664

Studienrichtung lt. Studienblatt /
degree programme as it appears on
the student record sheet:

Masterstudium DDP Urban Studies

Betreut von / Supervisor:

Governing Sustainable Mobility in the European Union

The Multiscalar Politics of Air Quality and Urban Mobility in Central Madrid

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Lauded as one of the most ambitious mobility policies in European cities, the Madrid Central low-emission zone was notably influenced by multiscalar governance process. This single-case study, based upon qualitative coding, scrutinises the Madrid Central policy and analyses the governance processes behind it. Based upon the regulatory framework on air quality, the European Union has largely shaped the policy. Hence, to assesses the wider themes within urban governance processes, this research analyses the influence of the supranational scale on local mobility policies. Moreover, this research addresses sustainable mobility governance in addition to the diffusion of governmental influence on multiple state-scales. To do so, this thesis conducts a policy document analysis of the relevant strategical and legislative framework and traces the policy process throughout the scales. The analysis reveals the multiscalar character of the Madrid Central policy, the motivations of each scale behind its policy strategies, and the interrelation of air quality policy with sustainable mobility.

Keywords: *Sustainable Urban Mobility, Low-emission Zones, Multilevel Governance, European Urban Agenda, Madrid Central*

Nachhaltige Mobilitätspolitik in der Europäischen Union

Die multiskalare Politik von Luftqualität und städtischer Mobilität in Zentral-Madrid

Von Niklas Bastiaan Dam

Die Umweltzone „Madrid Central“, die als eine der ehrgeizigsten Mobilitätspolitik in europäischen Städten gilt, wurde insbesondere von multiskalaren Governance-Prozessen beeinflusst. Diese auf qualitativer Kodierung basierende Einzelfallstudie untersucht die politischen Ebenen Madrid Central's und analysiert die zugrunde liegenden Governance-Prozesse. Auf der Grundlage des Rechtsrahmens für Luftqualität hat die Europäische Union die Umweltzone und dessen politischen Prozess weitgehend geprägt. Um auf umfassendere Strukturwandlungen innerhalb städtischer Politik einzugehen, analysiert diese Studie den Einfluss der supranationalen Politik auf lokale Mobilitätspolitik. Darüber hinaus befasst sich diese Studie mit den politischen Prozessen der nachhaltigen Mobilität sowie mit der Diffusion politischen Einflusses auf mehrere Regierungsebenen. Diese Arbeit analysiert den relevanten strategischen und rechtlichen Rahmen und verfolgt den politischen Prozess über die verschiedenen Ebenen hinweg. Die Analyse nimmt Bezug auf den multiskalaren Charakter von Madrid Central, die Motivationen der verschiedenen Regierungsebenen und den Zusammenhang zwischen Europäischer Luftqualitätspolitik und nachhaltiger Mobilität.

Schlüsselbegriffe: Nachhaltige städtische Mobilität, Umweltzonen, Mehr-Ebenen-Governance, Urban Agenda der EU, Madrid Central

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1. Introduction

As there is a growing awareness of the impact of urban mobility on environmental challenges such as pollution or climate change, cities are increasingly planning to advance more sustainable modes of mobility (Nieuwenhuijsen et al., 2019). Transitions such as these may include a restriction of private motorised vehicle access and a widening of the public transport options, supporting and prioritising active modes of transport, such as walking or bicycling (Banister, 2008). Several European cities have introduced such restrictions through manifold ways such as congestion charging in London, pedestrianisation in Brussels, or car-free Sundays in Paris (Nieuwenhuijsen et al., 2019). One of the most ambitious plans in recent years was implemented in the Spanish capital, Madrid (Salas et al., 2019; Lebrusán & Toutouh, 2020). The city has restricted access to private vehicles for 472 hectares of its centre influenced by the air quality policy of the European Union (Catalan & Medina, 2018). The policy is known as *Madrid Central* and was implemented in November 2018 and has been lauded a 'historic step to becoming a car-free city centre' (Medina, 2018). The low-emission zone has been accompanied spatial redistributions of infrastructure in favour of active and public transport. The policy introduced by the centre-left coalition around *Ahora Madrid* has however also been accompanied by heated political discussions within and beyond the municipal borders (O'Sullivan, 2018; Louven, 2019b; Gil & Caballero, 2019).

Urban mobility contributes to a variety of challenges that cities face nowadays, such as air pollution, climate change, socio-economic inequality, social inclusion and cultural access (Woodcock et al., 2009; Lucas, 2012; Appleyard, 1980; Kębłowski, Van Criekingen, & Bassens, 2019). Moving towards more sustainable modes of urban mobility may increase the liveability of a city, have positive impacts on the health of its citizens and contribute to the mitigation of climate change, to name a few (Nieuwenhuijsen & Khreis, 2016).

Urban mobility is however a highly contested field of urban governance and is defined by its complexity due to its interconnectedness to topics such as socio-economic inequality, environmental challenges and liveability. As one can see at the example of Madrid, there are significant political challenges to implementing and maintaining transitions towards other forms of urban mobility. Especially the right-wing parties, which currently form the administration have utilised the debate for political gains from Madrileños opposing the *Madrid Central* project. The successive attempts by the administration to overhaul the low-emission zone has led to protests within the Madrilenian civil society, local courts, national politicians and the European Union. Thus, there is a significant gap between what an increasing number of cities in Europe aspire to, namely shifting away from car-centred urban mobility towards sustainable mobility, and the ways in which to achieve and sustain this transition.

Furthermore, the governance of urban mobility is increasingly affected by various governmental scales, from the supranational to the local. In the case at hand, the European Union has taken a significant role, in shaping the Madrilenian mobility policy. Within the last decades the European Union has significantly increased its engagement with cities. Albeit not having direct competences on urban politics, supranational environmental policies have produced significant shifts in local mobility policies. Madrid's low-emission zone was introduced in response to the supranational legislative framework regarding air quality policy, and the increasing prioritisation this policy field has experienced within the European Union. Basing the research on the case of Madrid Central offers the opportunity to reflect upon wider processes within urban governance and politics and

the multifaceted processes which influence current sustainable mobility policies in European cities. The analysis of current urban governance processes must be conducted in relation to other governmental scales (Rozenblat et al., 2018).

Therefore, this research assesses the following question: To what extent current multiscale governance processes influence local sustainable mobility transitions in European cities? (RQ1). To address this question, this research examines the case of Madrid Central and thus the related question: In how far has the EU's engagement, through air quality policy, shaped the low-emission zone of Madrid Central? (RQ2).

Drawing upon the consolidated field of sustainable mobility research, this thesis examines the case of *Madrid Central* with a multiscale perspective, including research on the supranational dimension of urban governance. Policies such as Madrid Central can benefit from a multiscale perspective by tracing the origins and influences in a cross-sectoral analysis (Batterbury & Fernando, 2006). Existing studies on Madrid Central have primarily focussed on the environmental impact of the policy (Salas et al., 2019; Lebrusán & Toutouh, 2020; Izquierdo et al., 2020). Studies on the governance processes have not been published yet. Hence this research adds to the further understanding on the governance and politics around the timely Madrid Central policy and in the process reflect upon broader changes in urban governance, and the increasing multiscale character thereof.

In order to address the research question, the upcoming second section of the thesis introduces the theoretical contributions on the field of sustainable mobility policies and the governance thereof. The focus of the theoretical debate is placed upon the increasing engagement of the European Union with cities, its development and its institutional structure. Moreover, the city of Madrid and its governmental and political structures are highlighted to set the context for the case of Madrid Central.

The third section outlines the methodological approach. In order to address the research question, the thesis has analysed three major strategic policy documents on each relevant scale, as well as the legislative framework for the policy at the European and Madrilenian scale. The research conducts a policy document analysis based upon a qualitative framework. The documents were coded and subsequently analysed thematically, regarding their multiscale character, their relation to the European air quality framework, their motivations and the sustainable mobility policies they envision.

The fourth section proceeds to present the results of the analysis. The findings are presented individually according to the policy documents. First the three strategic documents are analysed, and second, the legislative documents. The combined findings of the research are debated thereafter. Hence, the fifth section synchronises the results and debates their relevant contributions to understanding the multiscale governance processes surrounding Madrid Central. Lastly, the thesis concludes on the most relevant findings, indicates this research's limitations, and suggests further research opportunities.

2. Literature Review

In 2010, 73% of European Union's citizens were living in cities (European Commission, 2017a). By the year 2050, this percentage is estimated to rise above 80% (European Commission, 2017b). Within European cities, modes of mobility based upon private motor vehicles are connected to multiple issues ranging from congestion, pollution to liveability (European Commission 2017b; Nieuwenhuijsen & Khreis, 2016; Gehl, 2011). Road transport accounts for roughly 20% of all greenhouse gas emissions (hereinafter: GHG) in the European Union (hereinafter: EU)¹ (European Environment Agency, 2018b). Transport is hence recognised as a key field in which GHG emission reductions can be undertaken considering the 2°C-goal of the Paris Agreement (Isaksson et al., 2017). Besides of medium- and long-term effects, urban mobility has concrete short-term effects on public health through its contribution to air pollution (Nieuwenhuijsen & Khreis, 2016). Moreover, it relates to well-being, physical development and wider safety concerns regarding vulnerable populations such as children and elderly (Lebrusán & Toutouh, 2020). Within the EU, air pollution is the top health hazard (pre Covid-19) which accounts for around 400.000 premature deaths in Europe annually (European Environment Agency, 2018b, p.8; Lebrusán & Toutouh, 2020, p.1). The World Health Organisation (WHO) moreover relates ambient air pollution to three million deaths annually (2016, p.14). Additionally, noise pollution caused by road traffic impairs the cognitive development of children and increases stress levels in the general population (Lebrusán & Toutouh, 2020, p.2). Cars are responsible for 80% of all noise pollution in the EU which contributes annually to 16.600 premature deaths (ibid.). Hence, urban mobility is a major factor in climate change and environmental stresses as well as health and liveability within European cities (Woodcock et al., 2009; Nieuwenhuijsen, 2016; Isaksson et al., 2017).

The subsequent literature review elaborates on the current state of urban mobility and introduces the concept of sustainable urban mobility and the related policies. Second, the governance structures and politics relevant to urban mobility are introduced and critically assessed. Third, the following sections introduce the relevant scales within this multiscale analysis debate case-relevant European policy and legislation. Fourth, the political and institutional context of Spain and Madrid is sketched out before, fifth, detailing the Madrid Central policy and its influences and consequences.

a. Sustainable Mobility Transitions – Governance and Challenges

Despite of the increased knowledge of the detrimental effects of our current system of urban mobility and the advances in fuel-technology, the share of GHG emissions by transport is still rising (Banister, 2011, p.1539). Prior research has shown that there has been an awareness of the car-based mobility system's negative effect on the environment as early as the 1960s (Tengström 1990, as quoted in Isaksson et al., 2017, p.51). However, most transport in the EU is still undertaken by private motorised vehicles (Jensen & Lassen, 2011). Thus, there seems to be major barriers in changing patterns of mobility. Mobility is a fundamental component of modern life (Jensen & Lassen, 2011, p.10). Western societies are increasingly mobile as the quantity and extend of trips are steadily increasing (Jensen & Lassen, 2011; Banister, 2008, 2011, Low & O'Connor, 2013; Nieuwenhuijsen & Khreis, 2016). Car based mobility, as Urry argues, extends beyond a transport mode and constitutes a system which influenced by our modes of economic production, culture

¹ List of Abbreviations in Annex.

and consumption behaviour, our socio-technological and political system and vice versa (Urry, 2004; Verplanken et al., 1997). Automobility, thus contributes to the very structures of our contemporary society, making it a rather stable system which impacts the complexity of mobility politics (Urry, 2004).

Nonetheless, as Low and O'Connor argue "the ideal of automobility entered its long decline, a new ideal model started to take shape characterized as sustainable transport" (2013, p.5). Whereas automobility focusses on enhancing speed and efficiency, sustainable mobility is characterised by its attempt to reduce the social and environmental damage inflicted on society by automobility and the way to reconstruct mobility that respect planetary boundaries (Low & O'Connor, 2013). Several researchers have indicated that western societies have reached 'peak-car' (Metz, 2010, 2013; Goodwin, 2011) and are slowly transitioning to a post-car system (Low & O'Connor, 2013; Moriarty & Honnery, 2008). The system of automobility may thus be succeeded by what some researchers have called 'sustainable mobility' (Banister, 2008, 2011; Goodwin & Van Dender, 2013).

The sustainable mobility paradigm is an alternative paradigm to our current car-based development of urban transport and urban land use (Banister, 2008, p.73). There is a myriad of definitions of sustainable mobility, which share the idea of creating transport that protects public health the environmental, and ensure intergenerational equity, as well as socio-economic sustainability (Zhang & Wei, 2013). Formulated differently, sustainable mobility aims to reduce the dependency of urban systems on cars and incentivises active modes of mobility, such as walking cycling, and shared, public transport (Banister, 2011, 2008). Several cities within Europe have started implementing measures to disincentivise automobility at the expense of active and public transport (Nieuwenhuijsen et al., 2019; Nieuwenhuijsen & Khreis, 2016). Sustainable mobility has a broad appeal as it constitutes a wide variety of interpretations. Thus, the debate must be narrowed down to specific measures.

This research focusses on urban vehicle access restriction measures, more commonly known as car-bans, which disincentivise or prohibit private motorised vehicle usage in urban areas (Cré, 2019). With a limited amount of urban space, a precondition for more sustainable modes of transport is the restriction to private vehicles, thus creating more infrastructure for soft and shared mobility (Nieuwenhuijsen et al., 2019; Nieuwenhuijsen & Khreis, 2016; Cré, 2019). Madrid Central has implemented two of such restrictive measures to foster alternative mobility, namely a low-emission zone (LEZ) and (semi-) pedestrianisation (Lebrusán & Toutouh, 2020).

LEZs are defined as zones in which access can be restricted to motorised traffic based on the environmental classification of vehicles and their related pollutants (Holman et al., 2015; Bannon, 2019; Santos et al., 2019). LEZs aim to reduce nitrogen dioxide (NO₂) and particulate matter (PM) pollutants which are directly related to urban mobility (Holman et al., 2015, p.162; European Commission, 2008; Gobierno de España, 2013, 2017 etc.). Thus, they are a widely used policy instrument for cities to improve public health, air pollution and environmental circumstances and have been implemented in more than 250 European cities (Bannon, 2019; Santos et al., 2019; Salas et al., 2019; Boogaard, 2012). The EU has actively supported the creation of LEZ within their Sustainable Urban Mobility Guidelines (SUMP) and even made LEZs as a precondition to certain EU funding programmes (Bannon, 2019, p.2). Additionally, as in the case of Madrid, cities have

implemented LEZs due to the European legislative framework regarding air pollution (Jiang, 2017; Holman et al., 2015).

The effectiveness of LEZs is still in debate, albeit the general research consensus shows positive effects depending on the policy's design (Salas et al., 2019; Jiang et al., 2017; Boogaard et al., 2012; Holman et al., 2015; Bannon, 2019). Madrid's extensive policy has been argued to be a successful example of LEZs (Bannon, 2019). However, some criticism applies, as the policy is not a universal solution and can increase socio-economic issues due to the disenfranchisement of peri-urban low-income groups and small commercial enterprises (Bannon, 2019; Boogaard et al., 2012). Hence, for LEZs to function properly, cities must provide incentives to use sustainable forms of mobility must be provided, such as good public transit or pleasant pedestrian spaces (Cré, 2019).

Pedestrianisation is defined as a conversion of a street to a car-exclusive area, effectively banning motorised vehicles (Szarata et al., 2017). Pedestrianisation is a 'push-measure' which describes restrictive, enforced instruments to discourage or disallow car usage in certain areas, through prohibition of entering or parking (Szarata et al., 2017, p.753). Several studies have pointed towards the positive impact such measures have on the environment, sustainable transport, health and mortality, the economy, social bonds, cultural supply and generally the well-being in urban areas (Soni & Soni, 2016, Lebrusán & Toutouh, 2020; Szarata et al., 2017; Sastre et al., 2013; Parajuli & Pojani, 2018 etc.). However, as Garling and Loukopoulos (2007) argue "the introduction of traffic and parking restrictions is one of the most sensitive and controversial aspects of the implementation of transport policy in the cities" (as quoted in Szarata, 2017, p.753). Thus, push measures such as pedestrianisation are often accompanied by significant opposition and can be politically costly. As full pedestrianisations are difficult to implement, more and more cities choose semi-pedestrianisations and partial car bans (Lebrusán & Toutouh, 2020, p.2).

Governing Sustainable Urban Mobility in European Cities

Albeit there has been much political and academic consensus in the widely accepted goal to create 'sustainable cities', the transition to sustainable mobility is still politically sensitive and hard to implement (Bulkeley & Betsill, 2005, p.42; Isakson et al., 2017, p.50). The sustainable mobility paradigm has been criticised due to its tendency to de-politicise mobility systems, and moralise and individualise consumer choices (Kęblowski, Van Criekingen, & Bassens, 2019; Reigner, 2016). Additionally, the paradigm is criticised by not considering the social challenges such as transport inequality based upon socio-spatial discrimination (Kęblowski, Van Criekingen, & Bassens, 2019; Reigner, 2016). Hence, rather than being a-political, mobility nowadays is in fact a highly politicised topic in urban areas across the globe. Similarly, Meadowcroft (2011) argues that politics pertains on every level of such transitions (p.71). Bulkeley and Betsill (2005) further argue that the focus on technocratic models "has meant that critical questions concerning the political struggles which take place in defining what urban sustainability might entail have been neglected" (p. 43). Moreover, some researchers have argued that sustainable mobility is inherently political, and that, correspondingly, sustainable development is a normative undertaking (Meadowcroft, 2011, p.71; Newig et al., 2007, p.185). Meadowcroft (2011) argues that "precisely because politics plays a potentially powerful role it requires explicit attention from those interested in understanding sustainability transitions" (p.73). Therefore, this research focusses on the political processes that influence sustainable mobility policy making.

There is a consolidated theoretical debate on the governance of sustainable urban mobility and the techniques policymakers employ to generate a wider acceptance, such as policy packaging, participation, experimentation, benchmarking and so forth (Low & O'Connor, 2013; Hrelja et al., 2013; Banister, 2008; Stead, 2016). Mostly as the example of Madrid shows, there is a combination of measures, including both 'carrot and stick' policies (Nieuwenhuijsen & Khreis, 2016). Changing current systems of mobility requires socio-political engagement both within and outside of formalised governance systems (Low & O'Connor, 2013, p.16). Stead (2016) argues that urban (mobility) policies generally are increasingly politicised in the light of new (or more strongly) felt social and environmental challenges. Additionally, reforms in governance structure have created new powers and responsibilities on the subnational level (Da Cruz et al., 2019). However, transformative interventions in the urban mobility systems require strong political support from civil society as well as from governance (Stead, 2016; Hrelja et al., 2013).

Due to its wide usage in urban studies and beyond, the term governance requires defining, as it is connotated in manifold ways. Governance, according to Hyden et al. (2004) refer to the "formation and stewardship of the formal and informal rules that regulate the public realm, the arena in which the state as well as economic and societal actors interact to make decisions" (2004, p.16). Rather than its definition raised in critical urban theory (Harvey, 1989; Stoker, 1998; Günter 2011a), in this research governance is understood as an umbrella term for different modes of political interaction including governmental command, competition, cooperation and negotiation (Treib et al., 2007).

Similar to the wider transformation of governance (Le Galès, 2002; Brenner, 1999; Harvey, 1989; Swyngedouw, 2004, etc.), urban mobility governance has also been characterised by an increasing complexity, fragmentation and re-scaling of power within governance, and the inclusion of a wider group of stakeholders (Brenner, 1999; Stead, 2016; Mocca, 2017). There is an increasingly European dimension to urban governance in general (Marshall, 2005; Brenner, 1999; Mocca, 2017) and urban mobility specifically (Stead, 2016; Mardsen & Stead, 2011).

The devolution of national government's powers has increased the importance of subnational as well as supranational actors (Le Galès, 2002; Kern & Bulkeley, 2009; Marshall, 2005). Thus, political processes on the urban scale cannot be analysed as autonomous decisions by autonomous actors, but must include multiple scales, including the supranational and global scale (Brenner, 1999; Bulkeley & Betsill, 2005). A variety of studies have emphasised the need to investigate the institutional conditions (norms, frameworks, power relations) which shape regional and local policy and planning processes (Isaksson et al. 2017; Hrelja et al., 2013; Hull, 2008). Rayner and Howlett (2009) argue that policy implementation is "always embedded in pre-existing contexts where the relics of earlier policy initiatives are found in paradigms, institutions, practices and established actor networks" (p.99). Drawing on this theoretical framework, this thesis aims to contextualise Madrid Central considering the European dimensions to urban governance and the institutional and political context that has shaped the policy.

b. The European Urban Agenda and Sustainable Development

The EU's governmental engagement with cities is marked by complexity and diversity but has been important in understanding 21st century urban governance (Da Cruz et al., 2019). Within the first decades of EU policy making, the urban polity has not been recognised constitutionally, hence the policy field is nowadays characterised by its fluid forms within ever-changing processes of

engagement (Halpern, 2014). Despite, or rather because of, the absence of a clear constitutional structure, European urban policies draw upon a myriad of other policy fields varying from regional cohesion, economic and competition policy and, most relevant here, to environmental policy (Günter, 2011a; Domorenok, 2019). To shed light upon the complex European urban policy field, this section introduces the historical trajectory, debates forms of multiscale governance and lastly elaborates on the policy area of European urban mobility and environmental policies.

One of the most influential steps in European-Urban multiscale governance relations is the so-called Urban Acquis (Günter, 2011b). In the 1990s, the European Community (EC) published a communication titled “*Towards an urban agenda in the European Union*” (1997) which became the basis for the EU’s approach to cities (Günter, 2011b). This approach was gradually developed within the context of the rotating national presidencies of the Council of Ministers (Domorenok, 2019). Different national ministers for regional or urban development have used the presidency of their countries to develop an integrated urban agenda for the EU via declarations and agreements, of which the *Rotterdam Acquis Urban* (2004), the *Leipzig Charter* (2007), the *Toledo Declaration* (2010) and finally the *Pact of Amsterdam* (2016) have been considered the most influential ones (Domorenok, 2019; Günter, 2011b; Eltges & Nickel, 2007).

Within these documents, the EU has drafted an integrated approach to sustainable urban development based upon three pillars: economic prosperity, social balance and a healthy environment (Domorenok, 2019). Moreover, these accords aim to facilitate both a horizontal coordination between different European cities as well as a vertical coordination with the supranational institutions of the EU (Günter, 2011a). Other formalised sub-supranational channels on an institutional level, which have an implicit or explicit influence over urban matters are the Committee of the Regions, the Commission’s DG Regional and Urban Policy, the European Parliament’s URBAN and REGI intergroups, the Economic and Social Committee and the European Investment Bank (Günther, 2011a). Additionally, the EU facilitates several interest groups, networks, platforms, transnational municipal networks and NGOs such as *Eurocities*, *ICLEI*, the *Covenant of Mayors* (Medina & Fedell, 2015; Kern & Bulkeley, 2009; Marshall, 2005; Günter, 2011b). Effectively, as Günter (2011b) argues, these developments have “established as a multilevel policy arena in the EU with a distinct set of actors, instruments and a shared vision” (p.22).

Multilevel governance is the main concept to describe this governmental relationship within the EU (Hooghe & Marks, 2001; Marshall, 2005; Günter, 2011a, 2011b). The term aims to theorise the complex functioning of the EU in which policy making includes varying networks and actor constellation on multiple governmental scales (Günter, 2011a, p.11). Therefore, multilevel governance describes a cooperation between different actor-constellation on different governmental levels to achieve a common goal (ibid). Within the concept of multilevel governance, the modes of interaction between cities and the EU in multilevel governance depend on the competences and policy instruments the EU has. These largely determine the field in which public body act and their policy outcomes (Günter, 2011a, p.12). Hence, to understand certain supranational engagements with the urban, one must scrutinise the specific policy arena and its related institutional and political channels, which this thesis proceeds to do in the analysis.

The concept of multilevel governance is part of a wider movement to understand scale in state theory and social sciences (the so called *scalar turn*) in which key authors such as Neil Brenner (2004,

2009), and Smith (1992), emphasised the increased academic focus on the interaction of different scales and governmental levels. The term ‘scale’ represents a relation or hierarchy of bounded spaces of different sizes ranging from the local to the global, and the processes between such spatial scales (e.g. multiscale) (Leitner, 1997, p.124; Jessop, 2004, p.226). It moreover reflects on spaces as objects of governance, which occur on different political levels or scales (Jessop, 2004, p.226). Hence scale is a useful term to describe the spatiality of politics and its dynamic relations.

However, some researchers argue that a certain constitution of scale in a specific process, and hence is not fixed but temporary and flexible (Leitner 1997, Jessop 2004, Smith 1992). Leitner suggests scales are not pre-given, but constructed through certain constitutions of social, economic and political processes (1997). The construction of scales is marked by constant negotiation, compromise, struggles and reshaping of “the spatiality of power and authority” (Leitner, 1997, p.125). For instance, the processes of European integration which have formed the EU have established a specific supranational scale standing in varying relations to other political scales (Brenner, 1999). Thus, economic restructuring and governance reforms within the last few decades have led to a *rescaling* of the state, and a diffusion of power to local, global and supranational scales (Batterbury & Fernando, 2006, p.1854, Da Cruz et al., 2019; Treib et al., 2007; Sassen, 2004).

Jessop (2004, p.228) argues that state-scales in the EU share powers with each other and different stakeholders across scales and sites, not through ‘domination’ but flexible political arrangements and complex open-ended processes of negotiation shaping certain policy outcomes. Relatedly, Hamedinger and Wolffhardt (2010) define research on European urbanism as research on “the interplay between actors and institutions on the European and the city level, which leads to changes in local politics, policies, institutions, arrangements, discourse, actors’ preferences, values, norms and belief systems on both levels” (p. 28). According to Günter, the complex intertwining of governmental actors and networks in the EU has produced new kinds of partnerships, networks, alliances and functional associations (2011a, p. 13). Furthermore, Da Cruz et al. (2019) propose that the EU is a particularly “fertile group to study multilevel governance” due to its impact and authority within Europe (p.10).

Reflecting on the political processes, Tasan-Kok and Korthals Altes (2012) argue that the European scale is especially relevant at the local level, because it can be used as an “extra device in [local actors] struggles over urban development” (p.1269). Impulses from the European level thus possess a political vigour that can empower progressive local actors to push for certain developments at their scale. Vice versa, local political groups can up-scale their struggle by including international institutions and platforms (Sassen, 2004). However, the involvement of the supranational scale with the local scale requires active domestic groups as well to draw the attention to local practices (Alter & Vargas, 2000; Tasan-Kok & Korthals Altes, 2012). This dynamic is important to understand the political coalitions between sub and supranational scales at the case of Madrid Central.

As mentioned above, to analyse multiscale governance relations between the EU and urban politics, one must look at a specific policy arena to understand the concrete forms of governance, as competences and forms of interaction vary starkly. By assessing multiscale governance modes in the EU, Treib et al. (2007), arrive at four distinct modes: *coercion*, *voluntarism*, *targeting* or *framework regulation*. The categories are characterised by their divergencies on legal binding-ness, the presence

or absence of sanctions, public involvement or private involvement and so forth, which define a policy area and its socio-political context (Günter, 2011a, p.12).

Those governance processes which are constitutive for the Madrid Central policy and its European governance dimension can be regarded as *framework regulation*. They describe a binding law, which offers certain flexible implementation processes and a range of policy options, which however should fulfil a specific societal outcome (Treib et al., 2007, p.14). The domain of European air quality policy and thus consequentially Madrid Central fits this description: (1) the legislative framework is flexible, due to the form of a directive, (2) it is enforceable, due to the potential sanctions of an infringement procedure, and (3) as a regulation of material standards providing specific standards for the policy outcome, in this case the levels of acceptable air pollution (Treib et al., 2007, p. 6-7). Hence, the proceeding section analyses the specific supranational policies regarding urban mobility and air quality which form the basis for the EU engagement in the case of Madrid Central.

c. Multiscalar Policy Processes: Madrid Central - From the EU to Madrid

I. The Supranational Scale: Urban Mobility and European Air Quality Policies

To reiterate, the EU has utilised a variety of competence fields to engage in urban governance due to an absence of a clear constitutional structure. As roughly 80% of all EU citizens currently live in urban areas (UNEP, 2010, p.142), and urban mobility contributes strongly to air pollution issues and climate change, various governmental levels in the EU have recognised the importance of mobility policy and intervene with a wide range of programmes and policy instruments (European Commission, 2016; Halpern, 2014, p.2527). The Commission argues that issues arising from (urban) mobility systems affect all European cities, and are thus shared European issues (European Commission, 2017b, p. 7). It addresses urban mobility in two manners, first through creating framework regulations, such as environmental and pollution legislation, and second, through soft measures, such as benchmarking, exchange initiative and sustainable mobility planning guidelines (Stead, 2016, p.41). Urban mobility is presented as a subtheme of the EU's transport and environmental policies in which the EU has first engaged in the mid-1990s (Halpern, 2014, p.2531).

The Commission illustrates the development of its urban mobility approach starting from the *Green Paper 'Towards a new culture for urban mobility'* (2007), aiming at stimulating discussion at EU level over sustainable urban mobility through best practice sharing, the *Action Plan on Urban Mobility* (2009), introducing improvements in information and other soft tools, the White Paper Roadmap to a Single European Transport Area (2011), which introduces carbon emission reduction targets, the Urban Mobility Package (2013) and finally the Paris Agreement (2015), which facilitates subnational authorities to scale up efforts in climate mitigation and foster international cooperation (European Commission, 2017b, p.14-15). Whereas, Domorenok (2019) describes the EU as one of the most relevant actors supporting a sustainability agenda, by fostering strategies on lower governmental levels and setting up policies, tools and funding. Cordonier Segger and Khalfan (2004) argue that sustainable development has itself become a meta-principle of EU policy making, which forms a vague but overarching, cross-sectoral policy paradigm. Sustainable development is enshrined within the quasi-constitutional 'Treaty on the Functioning of the European Union', since 1997 which states that the Union "shall set itself [...] to promote a harmonious, balanced, and sustainable development" (TFEU, Article 2) (European Union, 2012).

In addition to environmental and public health concerns, the efforts of the Commission in the field of urban mobility are justified by an economic argument. The Commission (2017b) argues that “urban areas are the engine to economic growth and employment, and the foremost producers of knowledge and innovation. Around 85% of the EU's GDP is generated in European cities” (p.6). Consequently, issues such as congestion and pollution are linked to its economic costs and quantified at €130 billion annually (European Commission, 2017b, p.7). Vice versa, investments in sustainable mobility, such as fuel and motor technology, are framed as great potentials for ‘sustainable’ economic growth within expanding markets for novel green technologies (Halpern, 2014, p. 2527). This research aims at investigating the supranational engagement in urban mobility policies in the analysis of the policy documents.

Urban Mobility and Air Quality Policy

Urban mobility is intimately related to air pollution within European urban areas, which is the basis for the European engagement therein (Halpern, 2014). Air pollution is regarded as the top health hazard within the EU leading to 400.000 premature deaths as well as a multiplicity of cardiovascular diseases, carcinogens, psychological distress and so forth (Vineis et al., 2016; EEA, 2018b; Lebrusán & Toutouh, 2020). It is moreover responsible for several environmental issues such as the depredation of ecosystems, disruption of photosynthesis processes, the reduction of agricultural yields and the impoverishment of biodiversity (Kuklinska et al., 2015, p.129). Additionally, air pollution is directly linked to climate change (WHO, 2016; Kuklinska et al., 2015; EEA, 2018a, p.14). The European Environmental Agency thus argues for an integrated policy approach addressing air quality and climate change (EEA, 2018a, p.14).

Air quality is moreover linked to the United Nations Sustainable Development Goals (SDG) 3 and 11 which are concerned with the health, well-being and environmental impact of air quality (UN, 2015; EEA, 2018a, p.15). Moreover, the WHO, relates SDG 11 on urban sustainable development and SDG 7 on energy production to the issues experienced with air pollution, which has led the WHO to adopt a resolution to address air pollution as a “major global public health threat” and relatedly “address the adverse health effects” on a global scale (WHO, 2016, p.14). There is a clear transboundary dimension to air quality on the European level, as Europe has a high density of industrialised nations and airborne particles can travel up to thousands of kilometres (Kuklinska et al., 2015, p.136; Wilde, 2010, p.283). Being one of the most important pieces in supranational environmental policy, effective action on air pollution must nonetheless consider local conditions and must produce local responses, which reaffirms the constitutive multiscalar character of the policy field (Kuklinska et al., 2015, p.136).

As road traffic is one of the major emitting sectors of air pollution, the EU frequently emphasises the interconnection between urban mobility policy and key environmental and public health objectives (Henschel et al., 2015; EEA, 2018b; European Commission, 2016, 2017b). Air quality became a salient political issue in the late 20th century. Its transboundary nature of air has mandated cooperation between different authorities, such as through the OECD's Helsinki summit (1975) and the UN Climate Convention in Rio (1992) (Kuklinska et al., 2015, p.130). One of the first international agreement was reached at the Kyoto Conference (1997) which mandated an 8% decrease of GHG emissions and air pollutants in the timeframe of 2008 to 2012 in Europe (ibid.).

The EU's engagement with air quality policy dates to the 1970s. Since then it has produced around three hundred different legal instruments to manage for air quality (Henschel et al., 2015; Kuklinska

et al., 2015, p.133). According to Wilde (2010), the first major efforts stem from the 1990s, particularly the directive on ambient air quality assessment and management of 1996. This initiative is the predecessor of the current air quality directive and has set air quality targets for thirteen key pollutants. Since the increased governmental attention to issues of air quality in the 1990s, the legislative framework on the supranational scale, has led to a considerable reduction within key pollutants (Henschel et al., 2015).

However, despite the ambient air quality improving in the EU since the 1990s, a new strategy was drafted in the 6th Environment Action Programme (EAP), namely the ‘Clean Air for Europe Programme’ (CAFE) (Kuklinska et al., 2015, p.133). The EAPs consist of the strategic guidelines to the EU’s environmental policies which define thematic priorities for European decision makers in timeframes up to ten years (BMU, 2020). The 6th EAP was initiated to review regulatory framework’s capabilities and led to the revised, comprehensive directive which establishes the current air quality policy framework, the *Directive 2008/50/EC on ambient air quality and a cleaner air for Europe* (Hereinafter: Directive 2008/50/EC) (European Commission, 2008; Kuklinska, 2015, p.133).

To fully understand the legislative mechanism that has influenced European air policy, a short contextualisation is necessary. The legal instrument of a directive is defined by the TFEU as “binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of form and methods” (Art. 288, TFEU) (European Union, 2012). Directives must be transposed into national law within two years, the form and means of the transposition are free to the member state. The Commission, as the ‘guardian of the treaties’ (Art.258, TFEU), can choose to take legal action against Member States (hereinafter: MS) who do not comply with the directives. It then initiates the procedure with a ‘Letter of Formal Notice’ asking the government in question about its compliance strategy. Thereafter, if not satisfied with the provided information, the Commission can request the Member State once more to present a solution. If MS fail to transpose a directive, or present timely solutions, the Commission may take the MS to the Court of Justice of the European Union (CJEU), which can result in financial or legal sanctions (Art.260, TFEU). This legislative context is important to understand Madrid Central, as it reaffirms the previously mentioned multiscale character of framework regulations (Treib et al., 2007). Thus, within the field of air quality, supranational engagements trickle down towards the national scale and finally at the municipal scale turn into, policies on urban access vehicle restrictions and LEZs.

The legislative framework through the Directive 2008/50/EC has further improved air quality in the EU. However, the Commission estimates that around 130 cities in the EU still experience above-limit NO₂ concentrations (2017, p.18). Within several MS, the persistent issues with air pollution have led to a prioritisation by the Commission, leading to the penalisation of non-compliant countries, ultimately resulting in the policy of Madrid Central (European Commission, 2017a, p.18). The Commission’s 2016 published *Strategy for Low-Emission Mobility* argues that “[...] Emissions of air pollutants from transport that harm our health need to be drastically reduced without delay” which exemplifies the urgency attached to mobility policies (European Commission, 2016, p.2).

Besides prosecuting non-compliant MS, the Commission additionally initiated ‘Clean Air Dialogues’ in MS which have failed to implement successful air quality policy (European

Commission, 2018a, p.6). Resulting from the dialogue held in Madrid in October 2018, the Commission, in cooperation with the Spanish ‘Ministry for Ecological Transition’, concluded that significant air pollution issues persist especially in major Spanish cities. Hence, Spanish cities shall accelerate their policy responses to reduce air pollution, especially nitrogen dioxide, emitted in the mobility sector (European Commission, 2018b, p.3). This, as the report argues, necessitates a fine tuning of LEZs such as Madrid Central and the restriction of automobile traffic in favour of public and non-motorized transport (European Commission, 2018b, p.3). Thus, as one can observe here, the supranational engagement within air quality policy can directly influence urban mobility transitions.

To summarise, the EU increasingly shapes urban mobility policies through its environmental policies. Motivated by climate change, environmental concerns and economic costs and benefits, the Commission moreover increased the pressure on MS and their subnational scales to act upon air pollution issues. Thus, rather than through the Urban Agenda characterised by soft approaches, the environmental policy of the EU directly determines urban mobility policies. Mobility is seen as the key source of current pollution issues, but vice versa, changes therein provide viable policy solutions. The EU utilises directives in reducing air pollution, whose outcomes depend on the national and regional transposition. The next segment further contextualises the policy of Madrid Central through the introduction of Spanish and Madrilenian institutional and political contexts.

II. The National & Regional Scales: Mobility and Environmental Politics

European efforts in multilevel engagements depend on the MS’ institutional and political structures (Tosics, 2011). This section thus contextualises the European efforts in environmental policies on its primary addressee, Spain and its environmental politics regarding air pollution and mobility. To understand the local to supranational policy process of Madrid Central, the multiscalar analysis considers the national and regional political bodies.

Rather than having a unified national approach to environmental policy, Spain has several major national strategies and policy guidelines existing besides of the European regulations which are considered as the main driver of Spain’s environmental legislation (OECD, 2015, p.55). The national authorities, such as the Ministry for Ecological Transition², are responsible for transposing EU directives and developing national strategies which guide subnational policy implementations, hence serve as an important bridge between the local and the supranational level (OECD, 2015, p.62).

The main national policy frameworks for air pollution in Spain are the *Ley 34/2007 on Air Quality and Protection of the Atmosphere* and the air quality plans *Plan Aire: National Plan for Air Quality and Atmosphere Protection 2013-16*, *Plan Aire II* (Gobierno de España, 2013, 2017; OECD, 2015, p.59). The latter strategy mandates the regions to adapt programmes to improve air quality and can be regarded as an impetus for Madrid’s ambitious policies (OECD, 2015, p.224). Spain’s progress on environmental policy has mainly been driven by supranational impulses from the EU (OECD, 2015, p.50; Vedrenne et al., 2015; May et al., 2017; Mozos-Blanco et al., 2018). Vedrenne et al. associate Spain’s efforts on air and environmental quality in the last two decades with its commitment to the *Gothenburg Protocol* (1999) and the European regulatory framework (2015, p.351). The European Directive 2008/50/EC has led to the establishment of 134 ‘air quality zones’

² Previously: Ministry for the Environment & Ministry for Agriculture and Fisheries, Food and the Environment.

along administrative municipal or regional boundaries (Vedrenne et al., 2015, p.355). Especially regarding NO₂ and PM, the country has lagged behind in the 2010s, and thus violated European limit values in four and eleven air quality management zones (p.352, p.355). Besides some parts of Catalunya, the region of Madrid is the only air quality management zones which persistently fail to achieve limit values (Teffer, 2019b; Vedrenne et al., 2015, p.355). In such zones, local solutions are encouraged based upon the ecological and socio-political circumstances.

Other than European regulatory impulses, effort such as the Sustainable Economy Law of 2011 (*Ley de Economía Sostenible*) have created significant shifts towards more sustainable mobility systems in Spanish municipalities, such as Madrid (Mozos-Blanco et al., 2018; OECD, 2015, p.55). Besides reforms in the country's economy following the 2008 recession, the law focusses on environmental sustainability aiming at the reduction of air pollutants and GHG emissions (Gobierno de España, 2011, p.4). The law was implemented in the Zapatero administration (PSOE) in 2011 and is regarded as one of the turning points in Spanish urban mobility approaches (May et al., 2017; Mozos-Blanco et al., 2018).

The law aims to improve the urban environment and public health, to use resources and land more sustainably, as well as to promote soft and shared mobility options or “means of transport with the lowest social, economic and environmental costs” (Gobierno de España, 2011, p.16). The law's approach to sustainable mobility is characterised as “the promotion of the means of transport with the lowest social, environmental and energy costs, [...] and compliance with international treaties related to climate preservation and environmental quality.” (Gobierno de España, 2011, p.9). To this end, municipalities shall implement strategies to “reduce the environmental impact of mobility, at the lowest possible cost” (Gobierno de España, 2011, p.16). This has sparked the creation of over 300 sustainable urban mobility plans across Spanish municipalities and regions which aim to adjust the primarily car-centric transport system (Mozos-Blanco et al., 2018).

Regarding environmental policies, the Spanish constitution grants the Autonomous Communities (hereinafter: AC) *concurrent competences*. Formulated differently, a minimum common denominator is set by the national government and detailed legislative proceedings occur on the regional scale, which possess the larger administrative body, representative and legislative functions, as well as administering a large share of national budgets (Tosics, 2011; OECD, 2015, p.53). Its decentralised federal structure of Spain may hinder achieving a coherent environmental framework (OECD, 2015, p.50). However, it also allows for certain regions to pioneer progressive policies in the environmental policy arena, such as arguably Madrid Central has been.

The region of Madrid (*Comunidad de Madrid*) is one of Spain's 17 ACs and 50 provinces. Following the 1980s, a wave of decentralisation in southern European countries have increased the role of subnational governmental layers (Tosics, 2011, p.30). Thus, the regions have their own Ministries of the Environment, which in the case of Madrid is the Ministry of Environment, Spatial Planning and Sustainability (*Consejería de Medio Ambiente, Ordenación del Territorio y Sostenibilidad*). The region moreover has its own parliament and government, setting additional impulses in the municipality of Madrid. Since Madrid Central was implemented the regional governments have been exclusively led by administrations of the conservative People's Party and were led by Cifuentes (2015-2018), Garrido (2018-2019) and the incumbent Diaz Ayuso (since 2019).

Based on the Sustainable Economy Law as well as the European Commissions' Action Plan on Urban Mobility (2009), the city of Madrid has established a sustainable mobility plan in 2014 (May

et al., 2017). Within the AC of Madrid, a total of 26 sustainable urban mobility plans have been implemented (May et al., 2017, p.11). The Community of Madrid has moreover developed its own air quality strategy, *Plan Azul* (2013). The strategy refers to the Spanish transposition of the European Directive (Ley 34/2007) as well as the *Royal Decree 102/2011* which applies to the ACs (Comunidad de Madrid, 2013, p. 18). The self-described reason for Plan Azul is the obligation to introduce air quality zones, based upon the European legislative framework, and hence to contribute to the national and European objectives on climate change mitigation and air quality improvement (Comunidad de Madrid, 2013, p.16 & 24). Much like the strategies discussed in the analysis, Plan Azul introduces the air quality assessment for the region of Madrid in addition to formulating policy responses (Comunidad de Madrid, 2013). Like the Spanish Plan Aire II, Plan Azul formulates sectoral and horizontal policy measures (Comunidad de Madrid, 2013, p. 17). Transport and the “mitigation of private motorized traffic and promotion of the modal shift towards less polluting vehicles and [...] public transport” is a key part of the strategy (ibid.). Regarding mobility however, the main competences lie at the municipal level (May et al., 2017, p.11). As seen in this section, the impulses from the national and the European scale are channelled through the ACs to the municipalities which are addressed in the upcoming section.

III. The Local Scale: Madrid and Madrid Central

The city of Madrid is the 4th most populous city in the EU with 3.3 million inhabitants in the city proper and roughly six million in the metropolitan area (Leal & Sorando, 2015; Lopez-Lambas & Ricci, 2012, p.9). To fully grasp the Madrid Central policy, it is necessary to consider the political and institutional context. Before the financial crisis of 2008 and its socio-economic consequences, Madrid has experienced one of the highest rates of population and economic growth within the EU (Leal & Sorando, 2015). However, in Spain the crisis has led to unprecedented socio-economic issues, with an unemployment rate of 25%, at-risk poverty rate of 20.6% and a foreclosure and economic inequality crisis (Blanco, Salazar & Bianchi, 2019, p.8). The country has seen a surge in its socio-economic inequality leading to a rise of Spain’s Gini coefficient, from 31.2 (2008) to 35 (2012), increasing the already higher-than-EU-average index (Leal & Sorando, 2015, p.215).

As Leal and Sorando (2015) show, the crisis has additionally spatialised socio-economic inequality in the metropolitan region of Madrid, increasing the medium to high-category earners within the city centre of Madrid, where the Madrid Central policy is located (Leal & Sorando, 2015, p.232-233). The socio-economic crisis has led to protests in 2011 (15M, Indignados) which Dikeç and Swyngedouw call urban political insurgencies (2017, p.3). In the local elections of 2015, the *candidaturas del cambio* (candidatures of change), drawing from the protests were elected in four of the five biggest Spanish cities, including Madrid, Barcelona, Zaragoza and Valencia (Dikeç & Swyngedouw, 2017; Blanco, Salazar & Bianchi, 2019, p. 2). The platforms that ran in the municipalities share an idea of politics which can be described as anti-austerity, critical of the neoliberal project and municipalist (Dikeç & Swyngedouw, 2017; De La Fuente & Medina Garcia, 2019).

In Madrid, the party *Abora Madrid* has managed to break the conservative *Partido Popular* hegemony, through a wide coalition building on the political left, and its relation to civil society and the protest movements (De La Fuente & Medina Garcia, 2019, p.3). The main pillars of the party’s policies are direct democracy and participation, collaborative governance, social economy and sustainable development (ibid.). De La Fuente and Medina Garcia (2019) argue that the administration has

struggled with the inexperience of the party confronted with the inertia of the administrative structures largely determined by the conservative party (p.4).

One of the most notable policies of the progressive *Ahora Madrid* administration is Madrid Central. Located in the sustainable development pillar, the policy has persisted the subsequent change of administration, due to the legal embedding and continued enforcement by various political and legal levels (De La Fuente & Medina Garcia, 2019). Known for its collaborative governance approach, the administration established an integrated Board for Rehabilitation, featuring representatives from all parts of society and political actors (De La Fuente & Medina Garcia, 2019, p.8). Moreover, in cooperation with supranational actors, the Directorate of Environment and Sustainable Urban Development established the strategy for urban regeneration, *Plan Mad-Re* (De La Fuente & Medina Garcia, 2019, p.9). The directorate moreover implemented the Sustainable Mobility Ordinance and developed an integrated ‘Strategy on Air Quality and Climate Change: Plan A’ (ibid.). Together, these two measures create the foundation for the Madrid Central policy and were interconnected with the *Plan Mad-Re*, all ensuring a sustainable urban development and climate change mitigation as well as air quality control (De La Fuente & Medina Garcia, 2019).

The interweaving of these measures assured an integrated approach to the objective of sustainable development and has made it difficult for the succeeding conservative government to change the policies (De La Fuente & Medina Garcia, 2019, p.9). The success of the new platforms *Ahora Madrid* or *Barcelona en Comu* has depended on the capability to create networks connecting the civil society and governmental actors on other scales (Blanco et al., 2019, p.18). Especially within the policy field of sustainable mobility, the administration successfully leveraged legitimisation by supranational institutions and networks as well as the Madrilenian civil society to ensure the implementation of their policies (De La Fuente & Medina Garcia, 2019, p.7).

Madrid Central – Influences and Consequences

The LEZ at the centre of this research, Madrid Central, has restricted nearly five square-kilometres of the city’s central parts to private vehicles, with a few exceptions such as residents of the area, electric vehicles and service vehicles (Lebrusán & Toutouh, 2020). The Madrid Central area consists of the neighbourhoods of Palacio, Embajadores, Cortes, Justicia, Universidad and Sol, which combined, accommodate around 140.000 citizens (Lebrusán & Toutouh, 2020, p.5). The plurality of trips within the city centre are undertaken by public transport with around 40% of the modal split in the 2010s (Lopez-Lambas & Ricci, 2012, p.9). However, within the increasingly sprawling city 44% of its suburban inhabitants use the automobile as the main form of transport (ibid.).

The LEZ of Madrid Central addresses Madrid’s continuing air pollution issue (Louven, 2019b; Planelles, 2019b). Madrid Central’s urban vehicle access restriction has been implemented by the government since November 2018, however, enforcement through sanctions have been introduced in January 2019 to ensure an incremental implementation (Medina, 2018a). Internationally, Madrid Central has been accompanied by positive feedback, as international press called the policy a ‘historic step’, a ‘shining example’ for other cities and a move to catch up to a group of ‘pioneering cities’ (Medina, 2018a; Louven, 2019a). O’Sullivan concludes that “even on a continent where many cities are scaling back car access, the plan is drastic” (O’Sullivan, 2018).

The policy was also used to change the physical appearance of the area and increase the liability and well-being as well as introduce behavioural change away from car usage (Lebrusán & Toutouh,

2020). Spatial redistributions have freed up 22.000m² for new pedestrian space, such as in the iconic Gran Via (Medina, 2018a) The Madrid Central policy builds upon earlier legislation from the Peoples Party called *Área de Prioridad Residencial* (residential priority zones), which had already restricted car traffic to residents in Cortes, Embajadores and Las Letras (Lopez-Lambas & Ricci, 2012, p.9; O’Sullivan, 2018; Medina 2018a). The policy has covered around 2km² accommodating 67.000 inhabitants and was similarly influenced by air pollution policy (Lopez-Lambas & Ricci, 2012, p.9).

Moreover, Madrid Central was strongly affected by the EU’s decision to take the Spanish government to the CJEU for failing to comply with air quality regulations, especially within the metropolitan regions of Madrid and Barcelona for a decade (Teffer, 2019b; European Commission, 2018c; Ayuntamiento de Madrid, 2017). The referral was based on the breach of nitrogen dioxide restrictions related to urban mobility, as laid out in Directive 2008/50/EC (Teffer, 2019b). Following the announcement of the Madrid Central policy by the Carmena administration, the Commission temporarily withdrew their legal proceedings against Spain (Louven, 2019b; Gil & Caballero, 2019). However, after the successive administration around conservative mayor Martínez-Almeida, announced to end the policy, the EU has continued the legal proceedings (Mendoza, 2020a). Multiple studies have shown that Madrid Central effectively reduced key air pollutants and GHG emissions (Ecologistas en Acción, 2020; Lebrusán & Toutouh, 2020; Salas et al., 2019). The existing assessments of the policy have confirmed a reduction of nitrogen dioxide and other pollutants, which have subsequently led to a compliance with WHO and EU regulation (Lebrusán & Toutouh, 2020). According to measurements by the environmental NGO ‘*Ecologistas en Acción*’, Madrid Central has led to the highest in air quality in since a decade, in 2019 (2020). Hence, Lebrusán and Toutouh (2020) conclude that “despite of the lifespan of Madrid Central, the measures proved to be effective addressing emission problems” (p.14).

Despite its success in improving air quality and omitting the EUs sanctioning procedure, the policy has been exposed to considerable political pressure. Following the municipal elections in May 2019, a coalition of centre-right to far-right parties have gained control over Madrid’s administration (*Popular Party, Ciudadanos, and Vox*). Within the election campaign, the current mayor José Luis Martínez-Almeida prioritised overturning Madrid Central, arguing for the economic costs for local businesses and its general ineffectiveness (Leon, 2019; Martín-González, 2019).

Immediately after the election, the administration attempted to suspend the fining system - thus neutralising the LEZ (Rodríguez, 2019; Planelles, 2019a). This attempt to cancel the rather popular policy of Madrid Central has been met with strong opposition on multiple scales. Mass protests were organised by the *Platform in Defence of Madrid Central* spanning eighty different civil society organisations (Planelles, 2019b). Moreover, the attempt was impeded on multiple occasions by local courts in June 2019, due to health and environmental concerns, as well as its embedding in the municipal climate change and pollution strategy (Plan A) (Rodríguez 2019; Leon, 2020; O’Sullivan, 2018). Criticism has also been voiced by the WHO’s head of public health and environment, arguing that “everything that protects health cannot be touched” (Planelles, 2019a). Other national figures such as the head of the Spanish Director-General for Traffic (Pere Navarro Olivella), as well as the national environmental minister (Teresa Ribera) have been vocal critics of the move (Bartolomé, 2019; Diaz, 2020). The EU’s commissioner for climate change, Miguel Arias Cañate (formerly PP), has also issued a warning that the Commission would have to reevaluate possible sanctions if Madrid Central would be dismantled (Gil & Caballero, 2019).

Hence, backlash on the decision to revert the policy has been voiced by actors as varies as the Madrilenian civil society, local courts, high ranking national politicians and international institutions. In July 2019, the Commission consequentially referred Spain to the CJEU for ‘failing to protect its citizens from poor air quality’ in other words, breaching Directive 2008/50/EC (European Commission, 2008). The Commission based this decision on the country’s sustained violation of nitrogen dioxide caps, related to road traffic, and specifically mentions sustained breaches in Madrid (European Commission, 2019b, July 25).

To mitigate the political and legal consequences of dismantling Madrid Central, the current administration introduced the supposed successor of the Plan A policy, Madrid 360 (Ayuntamiento de Madrid, 2019; Rodriguez-Pina, 2019). Almeida’s strategy on air pollution seeks in his words to “reconcile air quality with social progress” and reduces parking fees, increases motorbike access and reallowing most automobiles into central Madrid (Rodriguez-Pina, 2019). The administration was expected to defend the policy in Brussels at the Commission to sway the European authorities not to continue their legal processes which were initiated due to the city’s revoking of the fining system of Madrid Central (Mendoza, 2020a). Almeida moreover signalled the willingness to improve on it to abide by the EU directives (De Vega, 2020b). Sustained criticism regarding the Madrid360 strategy has prompted a reconsideration of the administration and Almeida’s claim to improve the strategy (Leon, 2020). Additionally, the defence of the strategy at the Commission was postponed indefinitely due to the Covid-19 pandemic, and hence the previous Plan A was kept in place (Leon, 2020; Ordonez, 2020).

The pandemic’s effects on public health are intimately tied to air quality, as early research indicates that the exposure to air pollutants significantly increases the lethality of the virus (Cole, Ozgen & Strobl, 2020; CREA, 2020). Moreover, the pandemic has strongly influenced mobility patterns in cities as public transport becomes less attractive, and automobiles cannot replace other forms of mobility, especially due to their connection to air pollution (Ordonez, 2020). Hence, rather than reverting to car-based mobility, several European cities have developed measures promoting cycling and walking as an alternative (Laker, 2020). Myllyvirta and Thieriot (2020) claim that the lockdown measures implemented throughout Europe, and the subsequent reduction in carbon energy usage, have collectively led to a reduction in air pollutants otherwise responsible for 11.000 deaths in Europe.

Regarding Madrid Central, the national Ministry for Ecological Transition has moreover argued that the reinstatement of the LEZ is inevitable, due to the novel Law on Climate Change and Energy Transition (*Ley 23/2020 del Cambio Climático y Transición Energética*) (Martinez, 2020; Diaz, 2020). The law approved in May 2020 requires every Spanish municipality above 50.000 inhabitants to establish LEZs applying to 148 cities (Martinez, 2020). Moreover, the legal struggles around Madrid Central have continued during the pandemic. In June 2020, Madrilenian courts have again ruled against Almeida’s efforts to dismantle the LEZs fining system (De Vega, 2020c). The latest ruling entailed the argument that public policy must safeguard public health and the environment, and hence the LEZ is a “legal corpus whose declared purpose is the protection of life, health and physical integrity of people” (Mendoza, 2020b). Controversially, in July 2020, the supreme court of Madrid has ruled that the implementation of Madrid Central has been made with technical procedural mistakes, which has yet again produced a pending court case on the existence of the LEZ (Medina, 2020). Thus, whilst persisting for now, the policy is continuously in a state of legal uncertainty.

Summarising the literature

To summarise, current modes of transport are connected to several environmental and social issues (European Commission 2017b; Nieuwenhuijsen & Khreis, 2016; Gehl, 2011). Climate change and air pollution are directly connected to urban mobility patterns (Woodcock et al., 2009; Nieuwenhuijsen, 2016; Isaksson et al., 2017). Albeit these issues connected to mobility are becoming increasingly apparent and politicised, the share of pollutants and GHG emissions is persistently rising and private motorised transport remains the dominant mode of mobility (Jensen & Lassen, 2011). The system of automobility (Urry, 2004), is nevertheless increasingly challenged by measures characterised as sustainable mobility policy (Bannister, 2008; Nieuwenhuijsen et al. 2019; Cré, 2019). As in the case of Madrid Central, measures may include LEZs and (semi-) pedestrianisations (Soni & Soni, 2016, Lebrusán & Toutouh, 2020; Szarata et al., 2017; Sastre et al., 2013; Parajuli & Pojani, 2018), and have improved air quality in cities as well as reduced GHG emissions (Bannon, 2019; Holman et al., 2015). However, due to underlying socio-political patterns it remains difficult to achieve transitions towards sustainable mobility (Urry, 2004; Reigner, 2016; Szarata 2017). As with many other supposedly a-political service provisions, mobility is in fact a highly politicised subject, which makes it highly relevant to study the underlying politics and governance processes.

Radical transformations of mobility systems within cities require the strong support of political leaders, coalitions and potent policy networks (Hrelja et al., 2013). Governance structures within cities have undergone a fragmentation and re-scaling of power and a widening of stakeholders within the last thirty years (Brenner, 1999; Stead, 2016; Mocca, 2017). One dimension of this process is the rising importance of the subnational and supranational scale. The EU has increasingly asserted itself as an influential actor on urban matters (Medina & Fedell, 2015). Especially within environmental issues, the EU has reiterated its key role as a policy facilitator (European Commission, 2019b). With its legislative action on air quality, the EU has shaped changes to urban mobility across Europe (European Commission, 2018).

The policy of Madrid Central can be regarded as a response to the increasing engagement of supranational institutions on urban mobility policies and air quality which diffuses through the national and regional scale (OECD, 2015, p.50; Vedrenne et al., 2015; May et al., 2017). The national scale relays key policies to the ACs which has created updated municipal mobility approaches (Mozos-Blanco et al., 2018). Madrid Central which was introduced by a Carmena administration in November 2018 (De La Fuente & Medina Garcia, 2019). One of the administration's main pillars, sustainable urban development, is exemplified through its strategy on climate change and air pollution (Plan A) including the LEZ (De La Fuente & Medina Garcia, 2019). However, after its implementation, the policy has been under severe pressure from the current administration (Martin-González, 2019; Minder, 2019; Leon, 2019). The Commission, moreover, has filed an infringement procedure regarding Spain's consistent breach air pollution legislation in the metropolitan area of Madrid and Barcelona (European Commission, 2017b). Albeit temporarily halting legal procedures due to the promising Madrid Central policy, the infringement procedure continued after its suspension (European Commission, 2019b). Hence as seen in the literature contributions, sustainable mobility policies, are increasingly influenced by multiscale governance processes and debates that exceed the territorial boundaries. Before turning to the analysis, the proceeding section introduces the methodological approach and the theoretical operationalisation of the literature.

3. Methodological Framework and Theoretical Operationalisation

a. Case study and Case selection

As debated in the theory, politics and policies of sustainable mobility are site-specific (Rayner & Howlett, 2009). Hence, this research uses a single case-study in a bounded context (Creswell, 2007). This allows this research to analyse the specific contemporary case of Madrid in depth and elaborate in detail on the multi-scalar processes influencing the case (Creswell, 2007). As an interpretative case study, this research uses the theoretical framework, presented above, to refine and evaluate on the theories regarding multiscale governance relations in sustainable mobility and environmental policies (Vennesson, 2008). Case studies are a significant if not constitutive part of how we acquire knowledge about the social or political world, as Vennesson argues (2008, p.241). Using Bachelard's concept of *applied rationalism* on case research, Vennesson (2008, p.229) elaborates that case studies imply an act of rupturing previously conceived ideas of a phenomena and breaking with conventional readings, contribution to theory, and contextualising processes through tracing them in-depth. Some limitations that are attributed to case studies are the reliance of potentially faulty theories, the assumption of autonomous cases and the general cognitive biases that any research faces (Vennesson, 2008).

This case study is specifically multiscale. Batterbury and Fernando (2006) conceptualise two types of multiscale research, first, comparative work between cases at the same scales, and second, research on one phenomenon across scales. The latter is used for this research and follows processes "across scale of singular policies, ideas or material practices", which could be described as a cross-sectoral analysis. Batterbury and Fernando (2006, p.1859) argue that "scaling" analysis of governance research is vital to understand governance processes thoroughly and the origins and impacts of a process. Similarly, Rozenblat et al. (2018) further argue that the analysis of urban systems must consider new multiscale reflections informing local cases. The qualitative approach facilitates the scrutiny of the rich case at hand (Bowen, 2009). This research applies the case relevant theory on a policy that has yet received marginal academic attention – Madrid Central.

This case is chosen due to three main characteristics of the case: First, the policy is highly contemporary and thus under-researched. Second, Madrid Central is an ambitious project that has sparked international attention and debate about sustainable mobility transitions. It is one of a limited set of influential sustainable mobility transitions with European capitals of today, which makes it both exemplary for processes in other European cities, but also stands out in its scope. Third, the complexity of governmental processes of the LEZ and the involvement of the supranational level provides a setting in which to elaborate further on the changing structures of urban governance.

b. Data Selection and Analysis

In order to scrutinise the case, this research utilizes a qualitative content analysis, based on qualitative coding of the case's key policy documents. Hence, methodological approach is reiterated of first, qualitative content analysis, second, policy document analysis, third, data selection, and fourth, qualitative coding.

Qualitative Content Analysis

Qualitative content analysis describes the method of systematically reviewing the meaning of data (Schreier, 2013, p.170). The method is derived from communication studies but has found its way into a variety of social sciences (Schreier, 2013). It is a way to focus on a selected set of material and the meaning thereof by applying tools such as coding, which is elaborated upon beneath (ibid.). It is moreover characterised by its flexibility, as it allows the researcher to apply content and concept driven research, as well as allowing the content to re-inform the research itself (Schreier, 2013, p.171). After the first main step in qualitative content analysis, the coding of all the material, the research moves into the phase of the analytical process in which the coded content is grouped into themes from which general observations can be made and theory can be assessed (Saldana, 2009; Schreier, 2013).

Limitations of the method include its restrictions to textual analysis, its descriptive properties, which do not allow for theory building but rather for theory proving, and its reduction of abstract material, which might bar a holistic understanding (Schreier, 2013, p.181). However, for this thesis' research, qualitative content analysis serves as an adequate methodological framework in order to analyse the material and approach the research questions through the policy document analysis.

Policy Document Analysis

The data derived for the qualitative content analysis stems from a set of pre-selected documents. Documents have long been a reliable source for researchers in order to extract meaning from to generate deeper understandings of certain phenomena (Atkinson & Coffey, 1997). Documents are also beneficial due to their accessibility (Cardno, 2018; Merriam, 1988). Especially European policy documents are usually well archived and accessible (Cardno, 2018). Thus, studies are easily reproducible and reliable, as the source for the analysis is openly accessible. Moreover, the researcher does not influence the data through the research process, as documents are a stable, non-reactive source (Bowen, 2009, p.32). Bowen (2009) further argues that document analysis as a research method is "particularly applicable to qualitative case studies" which he defines as "rich descriptions of a single phenomenon or programme" (p.30). Additionally, especially the field of urban studies during the continuing *Covid-19 pandemic*, document analyses provide a safe, accessible and quarantine-friendly manner of data selection.

However, some limitations apply. Documents, especially policy documents, are produced for other purposes than research, and might thus not provide sufficient details regarding the research intent or allow for exhaustive conclusions (Bowen, 2009, p.32). Additionally, the data is not *collected* but rather *selected* and hence, there might be a selection bias (Bowen, 2009, p.33). Bowen further cautions that documents should not be approached uncritically, and text passages shall not be copied without contextualisation (2009, p.34). Moreover, when using qualitative document analysis as a research method, the research should consider the representativeness of the documents and the target audience. These limitations have informed the research procedure and will be addresses in the analysis. The selection is detailed beneath and the documents themselves are contextualised at each section's beginning.

The specific document genre this research focusses on are strategic policy documents, which are produced in the arena of politics and policy (Lingard & Ozga, 2007). Therefore, they possess a different agency which must be recognised in the research. Taylor et al. (1997) have produced an

influential conceptual framework to account for the technicalities of policy document analysis. Policy document analyses should consider three dimensions: First, *policy context*, which describes the background of a document, the socio-political environment and the history of the document (Taylor et al., 1997; Bell & Stevenson, 2006). Second, *policy text*, which is the main feature of any document analysis and refer to a detailed data analysis, systematically reviewing the text (Cardno, 2018). Third, the *policy consequences*, how the documents inform implementation and guide policy operationalisation (Cardno, 2018; Ryan, 1994). Bowen additionally points out (2009, p.34), that it is important to assess the document's balance and analyse what has not been addressed. The analyses of the documents proceed based upon this structure and are thus subdivided into three thematic segments, where the first paragraph explains the policy's context, the last paragraph the policy's consequences and the intermediary paragraphs the policy's text itself.

Data Selection

The key strategy documents this section scrutinises are: First, 'A Europe that protects: Clean Air for All' (European Commission, 2018a), representing the supranational strategic layer. Second, 'Plan Nacional de Calidad del AIRE 2017-2019 (Plan Aire II)' (Gobierno de España, 2017), the Spanish air quality strategy. Third, 'Plan de Calidad de Aire y Cambio Climático: Plan A' (Ayuntamiento de Madrid, 2017), the Madrilenian integrated air quality and climate change strategy.

The research has selected the three strategy documents as they detail the policy guidelines of the most salient scales regarding Madrid Central. These strategies are statements of intent that inform both the public and other political actors of the approach to an issue, in this case air pollution. They highlight which themes motivate policy, which scales influence policy, and how institutions aim to address the issues. They are thus the narrative basis for the legislative documents on the operational tier.

Plan A, the first document that was identified during the research, is the strategic basis for the Sustainable Mobility Ordinance and presents the integrated approach to Madrid's environmental issues and policy solutions (Ayuntamiento de Madrid, 2017). Moving one scale above, the Spanish Plan Aire II 2017-2019 is Spain's strategic approach to air quality management which is related to Madrid's Plan A. The Plan Aires are referred to as the main Spanish strategy document within the theoretical debate (Gobierno de España, 2013; Gobierno de España, 2017). Plan Aire II falls within the timeframe of the Madrid Central policy and reflects upon the Plan Aire 2013-2016 and its consequences and was thus analysed. Similarly, the Commission has published several strategy documents regarding air pollution and urban mobility since the turn of the century. However, regarding Madrid Central, the strategic communication reflects upon the changing approach of the EU towards cities, Spain's air quality policy and indirectly refers to the LEZ, and was thus selected (European Commission, 2018).³

Additionally, due to their importance for the policy, the research analyses the legislative documents on the supranational and municipal scale, which are first, 'Directive 2008/50/EC on ambient air quality and a cleaner air for Europe' (European Commission, 2008) and second, 'Ordenanza de Movilidad Sostenible ANM2018/45' (Ayuntamiento de Madrid, 2018a). These legislative documents materialised, shaped and upheld the Madrid Central policy. They however stand apart

³ The Spanish Plan Aire II and the Sustainable Mobility Ordinance were translated from Spanish to English.

from the strategies as their target audience and character is fundamentally different but are decisive to understand the scope of the Madrid Central policy. Hence the two documents are discussed after of the strategy document analysis.⁴

Qualitative Coding

Bowen (2009) argues that all qualitative research “requires robust data collection techniques” (p.30). Coding has gained much traction in social sciences due to its potential of increasing validity and reproducibility of analyses (Linneberg & Korsgaard, 2019). Coding is used to condense and summarise data effectively, which in this case are the strategy documents. In a method of encoding, decoding and re-coding the data, this method scrutinises social phenomena such as documents (Saldana, 2009). Coding moves from attaching abstract phrases to parts of the data, to regrouping the data in certain themes and concepts, to finally assess a theory in the subsequent analytical process.

Codes are summative phrases or words that assign a certain meaning to the text (Saldana, 2009, p.3). Hence, parts of the documents are instances of more general phenomena within the text and can be grouped together. Schreier (2013, p.175) cautions that codes should be unidimensional, mutually exclusive and exhaustive to effectively categorise data. Codes serve as bases for a meaningful, reliable interpretation of the text in the subsequent analytical process (Linneberg & Korsgaard, 2019). For this purpose, themes are established which serve as an umbrella for the individual codes. The coding procedure this research utilized is *framework coding* also known as *a priori coding*. A priori coding refers to codes derived from a theoretical framework, informed by existing literature, rather than emerging from the data itself (Saldana, 2009, p.49). Epistemologically, it is thus a deductive process in which theories inform hypotheses which through the analysis of the data are confirmed or dismantled (Linneberg & Korsgaard, 2019). The specific codes that are attached are conceptual codes, such as for instance *multiscalar governance* or *sustainable mobility* (Saldana, 2009, p.66). For the sake of transparency, reliability and reproducibility, some codes this research utilizes are *policy motivation*, subdivided into *public health*, *environment*, *economy and climate change*, *supranational justification*, and air quality as an *urban issue*.⁵ These codes allow a meaningful systematic analysis of the chosen documents, with regards to the underlying research question.

This initial coding was used to structure the analysis. Subsequently, the codes were grouped and assessed based on their thematic interrelation. Based upon the a priori codes the thematic fields were first, the multiscalar relation, as expressed within the documents, second, the motivation to act upon air quality issues, and third, the role of sustainable mobility as a potential solution. The thematic analysis is presented in the analysis *policy text* section, as derived from Cardno (2018) and Taylor et al.’s (1997) contributions to analysing policy documents.

⁴ The Spanish legislative document (Royal Decree 102/2011) has been intentionally left out, as it is the transposition of the European directive and hence does not add additional insights and exceeds the scope of this research.

⁵ The complete coding procedure can be provided upon request.

c. Research Hypotheses

To reiterate, this research assesses the question: To what extent current multiscalar governance processes influence local sustainable mobility transitions in European cities? (RQ1). To address this question, this research examines the case of Madrid Central and thus the related question: In how far has the EU's engagement, through air quality policy, shaped the low-emission zone of Madrid Central? (RQ2).

From the theoretical contributions, the thesis has established the two following hypotheses. First, major processes of the 21st century such as socio-economic inequality, climate change and sustainability have a distinct supranational character, as they are quasi universal processes. The consequences are however distinctly local, as such processes materialise within local and regional areas. Within governance, one can observe the increasing diffusion of power from the national state towards subnational and supranational organisations. The EU has increasingly been engaged in the urban polity. Larger ideas of empowering cities, where more than half of all Europeans live, and sustainability, in its myriad of definitions and connotations, have generated a distinct supranational engagement with cities. The EU has limited instruments to directly influence urban matters. However, through policy fields such as environmental regulations, the EU increasingly steers urban policies, such as in Madrid.

The European Commission argues that issues such as air pollution, are shared issues which extend across territorial units. Air pollution and climate change are tightly connected to mobility systems in the EU, and hence the Commission influences urban mobility through air quality policy. This engagement then gets channelled through different institutional structures with varying policy instruments, which produces local material outcomes such as the Madrid Central policy. Hence, this research hypothesises, that Madrid Central can be regarded an example of novel supranational-subnational political constellations. These structures might become of importance in addressing the multiscalar character of transnational issues such as climate change and air pollution.

Second, within major European cities, urban mobility has been increasingly politicised. Coupled with an increased awareness of environmental issues and the negative impact of car-based transport systems, sustainable mobility transitions are a hard-fought-over topic within cities. Urban service provisions are rarely apolitical and, especially regarding mobility, one can observe an increased polarisation along ideological lines. Meanwhile, major European cities are pushing ahead with shifting their mobility system in favour of multi-modal and soft mobility. Such international examples generate translocal debates about policies and best practice sharing. Through the increased international political pressure by good-examples, and the EU's engagement, progressive forces within cities may have found new political leverage. Moreover, due to its legal standing, EU interventions can have lasting influence regardless of the political colour of the municipal administration. This research hence hypothesises that local political struggles for sustainability have gained a distinct supranational character - both horizontally across cities and vertically with supranational institutions.

4. Results

The following results of the analysis are presented starting with the strategy documents from supranational to national level. The rationale behind the structure is to trace the process of Madrid Central throughout the scales. The strategy documents are presented first as they serve as the rhetorical basis for the operational tier, the concrete legislative documents, which materialise the strategies and are presented thereafter. The findings are presented according to the systematic build up drafted by Cardno (2018) starting with *policy context*, *policy text* and *policy consequences*. As this research applies a qualitative content analysis the *policy text* section harbours the thematic analysis based upon the qualitative coding framework.

a. Strategic Policy Document Analysis

I. The European Scale: “A Europe that protects: Clean air for all”

The first document this research scrutinises is the Commission's communication “A Europe that protects: Clean air for all” (European Commission, 2018a⁶). The document was released in May 2018 and is publicly available in the online archives of the EU (*COM (2018_330_final)*). European Communications are public statements of intent, which are officially addressed to a multiplicity of European institutions, in the case at hand to the European Parliament, the Council of Ministers, the European Economic and Social Committee as well as the Committee of the Regions. Communications inform civil society and the press about the Commission's policy strategies, its proposed legislation, and its conduct of action.

Throughout the document, the Commission formulates a decisively multiscale approach to air quality and the related policy field of mobility. The document argues that multiscale cooperation is a precondition for successful air quality measures to “build effective action at national, regional, and local level across administrative boundaries between public authorities” (p.6). This leitmotiv is recurring throughout the document. The EU sees itself as a “facilitator [of] the necessary measures” at other scales, especially the urban scale (p.1). The document showcases the EU's aims to provide guidance for local authorities through policy recommendations and providing best practice sharing platforms (p.4). Additionally, the creation of translocal dialogues and policy sharing platforms, to achieve the supranational targets in air quality, are stressed (ibid.).

Under the subtitle of *Bringing together Member States, regions and cities* the document lays out the EU's approach to the national and subnational scales in a multiscale framework (p.6). Here the document states the EU's achievement in furthering the EU Urban Agenda through its budget, launching the ‘Clean Air Forum’, setting up urban investment guidelines with the European Investment Bank, in addition to strengthening ties with the Global Covenant of Mayors. The EU's objectives are addressing “urban challenges ranging from fighting pollution, to mobility and sustainable urban development” and “reducing greenhouse gas emissions and promoting a low-carbon economy transition and resilience at urban level” (p.7). This recurrent inclusion of the urban scale within the document reinstates the key role the EU ascribes to cities in combatting air pollution through local efforts. Basis for the role of cities is urban air pollution, which the document argues, is especially severe (p.1). Finally, concludes that the “[...] urgent need to improve

⁶ For brevity's sake, if not stated otherwise, all page numbers refer to the policy document addressed in the section.

air quality [...] requires action at all levels (national, regional, local) and the European Commission is supporting such action by means of all the tools at its disposal” which pointedly summarises the documents approach to other scales and the role of the EU (p.13).

Particularly noticeable in the document is the repeated justification for supranational engagement in local air quality and urban mobility. Due to the constitutional structure and the principles of *subsidiarity* and *proportionality*, the Commission must justify its engagement on policy issues that might be addressed at the national and regional scale. The Commission does so in two ways: first, it argues that as air pollution affects all European citizens and is significantly transnational, the European institutions have an agency on the matter (p.2). Relatedly, the document argues that citizens expect (European) authorities to act upon air quality and that a common regulatory framework ensures the “efficient internal market functioning” (p.1-2). Second, the document stresses the success of the European engagement in reducing key pollutants, through measures such as the Directive 2008/50/EC, and consequentially should continue its action on this policy field (p.1).

The motivations to act upon air quality in the document are manifold. Besides of the warrants to public health, such as asthma, lung cancer and cardiovascular complications (p.1, p.2, p.3, p.5), environmental problems are stressed. The document recognises the interconnectivity between common air pollutants and GHG emissions which often stem from the same source (p.6, p.7). Improvements public health and environmental factors together generate a quality of life, which the EU aims to protect (p.6). Economic arguments are especially pronounced in the document, where it argues that “poor air quality reduces quality of life and is of great cost to the economy” (p.12). Additionally, shifts to a low-carbon economy and the support thereof may increase the competitiveness of the European economy through technological innovations (p.4). The document moreover relates air quality policy to “broader European Commission priorities on sustainable growth and job-creation” (ibid.).

As a major theme of this research is the shift to sustainable mobility, the framing of (urban) mobility within the strategy document is especially intriguing. Mobility is key to the Commissions efforts in reducing air pollution as it states that “the transport sector is the largest contributor to nitrogen oxide [and] particulate matter emissions” (p.4). The European mobility approach can be described as twofold, namely first, stressing the technological improvements in fuel and motor technology (e.g. p.4), and second, urban mobility transitions (e.g. p.5). The document argues that a significant part of reducing emission is “behaviour change and demand management [and] infrastructure investment (p.4). The EU supports shifts in urban mobility systems through urban vehicle access restrictions and the facilitation of soft and public mobility, as was the case in Madrid (p.6). It is further argued that integrated measures regarding urban mobility are the key to the successful improvement of air quality in cities specifically, and thus on aggregate in the EU. Therefore, policy solutions should be part of a “comprehensive Sustainable Urban Mobility Plan and duly integrated in local air quality plans established under Directive 2008/50/EU” (p.4). This quote is especially insightful to the research as it indirectly addresses the Madrilanian mobility transition and its relation to wider supranational aims within air quality policy.

To summarise, this strategic top-tier document aims to cement the European engagement on the issues of air pollution. It presents its previous engagements, their consequences for the policy field and consolidates further engagement. Hence, the document provides the strategic basis serving as

guidelines to the other governmental actors within the EU and at other scales. It has moreover presented its argumentation for the infringement procedure against MS such as Spain, based on nitrogen dioxide breaches. Perforating through the national to the subnational level, this has considerably shaped the implementation of Madrid Central (p.9). However, the document is a *Communication* and hence specific policy implementations are regulated on different governmental scales, such as in Spain's national air quality strategy.

II. The Spanish Scale: “Plan Nacional de Calidad del AIRE 2017-2019 (Plan Aire II)”

Spain's *Plan Aires* are the strategic documents which develop an integrated air pollution policy and delegate measures to national ministries and subnational authorities. Plan Aire II (2017-2019) is a continuation of the Spanish national strategy in the time frame of 2013-2016 (Gobierno de España, 2013, 2017). Its self-stated purpose is to make information on air quality policy more accessible, transparent and public (Gobierno de España, 2017). Plan Aire II and its predecessor, Plan Aire I, mandate the ACs to adapt effective policy measures to improve air quality in their field of responsibility (OECD, 2015). The document is available online, and due to its aims of transparent communication, is easily accessible, such as on the website of the responsible Ministry for Agriculture and Fisheries, Food and the Environment⁷. Its strategy is derived from the EU's *Directive 2016/2284 on the reduction of national emissions of certain atmospheric pollutants* and establishes a policy framework for improving air quality in Spain (Gobierno de España, 2017, p.3). The strategy is subdivided twofold: first, horizontal measures are presented, which are achieved on a national level and include public information awareness, general administration and taxation, and second, sector specific measure in, for instance, the transport sector (Gobierno de España, 2017, p.6-7).

The document is structured as follows: the first introductory section presents the legislative framework from the European to the national level and lists the motivations to act upon air quality (p.2-11). Subsequently, a diagnosis of air pollution on the Spanish territory is presented, with each major pollutant being discussed separately (p.11-46). Section three debates the objectives of the strategy (Gobierno de España, 2017, p.46-47). In total the plan introduces 52 measures aimed at achieving these objectives and address air quality improvements from a variety of different angles (p.47-116).

Regarding the multiscale approach in the air quality strategy, the document repeatedly points out the legislative consistency between the Spanish and the European regulatory framework, where the first draws heavily from the Directive 2008/50/EC and its ‘daughter directives’ (p.7). The strategy document relays the European legislative framework and delegates responsibilities to its subnational regions. The ACs shall define zones and agglomerations which serve as areas for air quality measurement and tailored policy solutions (European Commission, 2008; Gobierno de España, 2017, p.8). Consequently, the diagnosis presents the limit values, target values and threshold alert data for different ambient air pollutants as mandated by the Directive 2008/50/EC, discussed beneath (p.9-10).

⁷ Its Spanish name is Ministerio de Agricultura y Pesca, Alimentación y Medio Ambiente which has existed between 2011 and 2018 and now has been split into the Ministry for Agriculture, Fisheries and Food (MAPA) and the Ministry for Ecological and Demographic Challenge (MITECO).

The motivations to act upon air quality are kept brief throughout the whole document. However, the preamble states that ambient air quality is a “common good for life” and argues that air pollution harms “human health, the environment and other assets of any nature” (p.2). The economic argument, bearing heavy on the European scale is absent here. However, the document lists the legal compliance to European directives as a key motivator to act upon air quality. Within the objectives of the document, the motivation to improve public health and the environment comes after the objective to “guarantee the compliance with legislation in terms of air quality in all areas: national, European and international” (p.46).

The interrelation of mobility and air quality is mostly explicitly stated in the collection of measures addressed at the Spanish mobility system (p.59-66, p.82-98). The document states that measures shall be adopted to “facilitate the use of alternative means of transport that bring about a decrease in the use of the car and therefore an improvement in air quality in urban areas” (p.59). Hereby, the relation between air quality and sustainable mobility transitions, which shapes Madrid Central, is most pronounced. The horizontal measures brought forth regarding mobility include infrastructure improvements for e-transport in public buildings, the promotion of cycling, and crucially, reforming the Spanish traffic law to account for a more “current social context” including the promotion of intermodality in urban areas (p.59). To this end, the Ministry for Transport (DGT) is obliged to set up working groups on, amongst others, environmental restrictions in cities and new active mobility patterns (p.62). Additionally, as the document states that the explicit aim of the DGT should be to “promote intermodality and [...] the most sustainable modes of transport” (p.65).

Besides of the horizontal measures, the sector specific measures on road traffic reflect and follow a similar argument, namely that mobility is the “main cause of air quality problems in large cities” (p.82). Hence, measures regarding road traffic are the most extensive set of measures introduced in the strategy (p.82-p.98). For brevities sake, a selection of the measures is mentioned here. Measures include the improvement of e-vehicle fleets, accessibility and infrastructure, in addition to a more efficient public and shared transport contributing to the “objective established by the European Union in relation to the decarbonisation of transport” (p.92). Other road traffic measures are explicitly connected to Madrid Central (Measure 11 & 15; p.93, p.97). Measure 11 aims to improve the environmental classification models for vehicles serving as a basis for measures to “discriminate positively against the most environmentally friendly vehicles allow the establishment of low emission areas in urban centres” (p.93). Measure 15 further adds to that by ruling on the closure of roads for certain vehicles due to environmental reasons, in which local administrations and the ACs can decide upon (p.97).

To summarise, the overall intended impact of the policy is to provide an updated national air quality strategy. The analysis indicates that the document serves as an intermediary scale between the general objectives and regulatory framework of the EU, where Spain assumes the role of delegating the necessary measures to the relevant sectors and public authorities. The policy measures each have their own timelines and monitoring standards, whose progress is presented in the subsequent strategy (Gobierno de España, 2017, p.116-126). Coming from the supranational scale to the national strategic framework, the measures become more concrete on specific policy fields such as urban mobility, which is further refined by the local scale.

III. The Municipal Scale: “Plan de Calidad de Aire y Cambio Climático: Plan A”

The third document this research analyses is Madrid’s “Plan A” (Ayuntamiento de Madrid, 2017). The strategy introduces the city’s integrated air quality and climate change strategy. Plan A was approved in September 2017 substituting the Plan for Air Quality (2010-2015) and was followed by *Madrid 360: Avance de la Estrategia De Sostenibilidad Ambiental* (Ayuntamiento de Madrid, 2019). The strategy was developed by the Directorate of Environment and Sustainable Mobility, which in the development stage integrated citizens and stakeholders from various fields, disciplines and levels (De la Fuente & Medina, 2018, p.9). Plan A was operationalised through the city’s Sustainable Mobility Ordinance (Ayuntamiento de Madrid, 2018a; De la Fuente & Medina, 2018, p.4). The document first, defines its guiding assumptions and principles before analysing the current situation of air pollutants and GHG emissions in the municipality (Ayuntamiento de Madrid, 2017, p.3-4; p.5-18). Thereafter, objectives and measures are presented according to the policy fields of sustainable mobility, urban regeneration, climate change adaptation, public awareness and multi-level cooperation (p.19-48).

The theme of multiscale governance relations is recurring throughout the documents and is used as an argument for the measures, and a motivation for the strategy. Within the guiding assumptions Plan A argues that air pollution and climate change shall be tackled with an integrated approach, as suggested by the European Thematic Strategy on Air Pollution (Ayuntamiento de Madrid, 2017, p.3; European Commission, 2005). Moreover, the document draws connections to the efforts of transnational municipal networks, such as the *C40 Group* and the *Climate and Clean Air Coalition*, to reiterate the importance of integrated environmental policies as well as the governmental potentials of multiscale cooperation (p.3). Within the segment on multilevel cooperation, the strategy moreover mentions the interconnection with other scales and the necessity to coordinate efforts (Ayuntamiento de Madrid, 2017, p.20). Therefore, the multiscale dimension of the strategy document is constitutive for the objectives and its consecutive measures.

As the title of the strategy paper suggests, the plan’s aim is twofold, namely ensuring the city’s air quality as well as bracing the city for the transformative consequences of climate change. Hence, the main motivations to act upon air pollution are driven by environmental concerns (Ayuntamiento de Madrid, 2017, p.2). However, on a long term, these combined efforts work aim at “strengthening urban resilience” and shifting the city “towards [a] sustainable urban model” and “ensuring a high quality of life” (p.19, p.2). Hence a key objective is to develop a strategy to significantly reduce “GHG emissions caused by urban mobility” (p.19). Another main objective for the document is to improve public health by curbing the effects of atmospheric pollutants (p.19). Additionally, like Plan Aire II, the document argues that a prime objective is to “meet European and national legislation regarding air quality” (p.19). The document further intends to contribute to achieving the objectives set out in the “Paris Agreement and the EU Climate Agenda, and in line with the new Covenant of Mayors for Climate and Energy” (p.19). Hence, the explicit motivation to honour international agreements and achieve supranational legislative framework is a significant influence for the city’s air pollution and climate change strategy.

Mobility is presented as the key policy field to achieve the objectives of reducing air pollution and GHG emissions (p.19). Within the analysis of pollution sources, the document indicates that transport accounts for 51.4% of NO_x emissions in Madrid (2014), 61.3% of PM₁₀ and 55% of PM_{2.5} emissions (Ayuntamiento de Madrid, 2017, p.15-16). The highest levels of NO₂, PM₁₀ and

PM2.5 concentrations in Madrid occur in the city centre and along major roads such as the *M30* and *Paseo de la Castellana* (p.15-16). The document aims to reduce the usage of private motorised and promote “public transport and active mobility modes (pedestrian and bicycle)” (Ayuntamiento de Madrid, 2017, p.19). Here, the LEZ, later named Madrid Central, is first introduced which is implemented to “act as a catalyser for the necessary transition of the city as a whole towards a model of low emission mobility” (p.19). The simulations of the intended outcomes, regarding atmospheric emissions, air quality and health impacts show a positive effect within the city, with reductions in all relevant pollutants (Ayuntamiento de Madrid, 2017, p. 21-37). The document concludes that “zones with greatest reductions are to be found in the area defined as the zero emissions zone, with reductions of up to 20%” of fine particulate matter (p.32). Sustainable mobility policies such as Madrid Central are hence the main measures to achieve the European air quality objectives and the UN’s climate change agreements.

To conclude, the analysis has shown that Plan A takes the larger societal objectives set out on the international, European and Spanish scale and transforms them into strategies at the local scale. Moreover, the document weaves in the complexities of the integrated efforts of climate change adaptation, resilience and air pollution and connects them to local level policies on mobility transitions and urban regeneration. In order to achieve the objectives, set out by the strategy in accordance with other governmental actors, Madrid Central and its related mobility policies are the key measures introduced. Hence, at the Plan A, one can see the transition of air quality policy into detailed urban mobility measures.

b. Legislative Document Analysis

Having analysed the relevant strategical documents, the following section scrutinises the legislative documents which are the operational transposition thereof. The legislative documents are important to understand to specific materialisation of the large-scale strategies on the local level and set the basis for the LEZ of Madrid Central.

I. Directive 2008/50/EC on ambient air quality and cleaner air for Europe

As introduced in the thesis’ second section, the Directive 2008/50/EC is the main legislative framework for air quality management in Europe (Wilde, 2010; Kuklinska et al., 2015). Through the 6th Environmental Action Plan (EAP) and the Clean Air for Europe Programme (CAFE), the European authorities established the necessity for a revised regulatory framework, which has been implemented through the Directive in 2008. The transposition phase for MS terminated in June 2010, which sets the date at which the Directive fully comes into force at the national scale. In Spain it has been transposed in the ‘Royal Decree 102/2011 regarding the improvement of air quality’ (Gobierno de España, 2017, p.5). The main section of the document consists of thirty-five articles which are clarified through seventeen annexed sections.

The directive’s preamble contextualises the policy with regards to the 6th EAP (European Commission, 2008, p.1-4). It establishes the need to reduce air pollution with regards to both the environment and public health, and a better monitoring and assessment of pollutants (p.1). The Directive integrates and updates former EU measures (ibid.)⁸. The self-prescribed aim is to identify

⁸ Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management; Council Directive 1999/30/EC of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air; [...]

and combat the most harmful air pollutants at their source, depending on the scale at which they occur “at local, national and Community [EU] level” (ibid.). The Directive’s preamble further argues that, whilst respecting the socio-ecological diversity of European (policy) landscapes, a unified supranational approach to air pollution is necessary, due to its transboundary nature (p.2-3). Hence the EU is mandated to act upon the issues as they are “better achieved at Community level”, respecting the key legal principles of subsidiarity and proportionality (§25, p.3). Additionally, the Directive connects its objectives to the *Charter of Fundamental Rights of the European Union* which entails the objectives of sustainable development and a “high level of environmental protection and the improvement of the environment” (p.4). The Directive is thus connected to short- to mid-term objectives, regarding public health and the environment, in addition to contributing to the EU’s long-term principle of ‘sustainable development’.

The Directive mandates MS to draft both long-term strategies and short-term plans to combat air pollution (p.3). These plans in addition to the measurement and assessment of air pollution shall be as transparent as possible and involve the civil society in its monitoring (p.3-4). The directive’s approach to improving air quality is to define subnational ‘air quality zones’ as spatial layers to address local pollution issues (p.4). Within the zones which as defined as “territory of a Member State [...] for the purposes of air quality assessment” (p.5), a standardised method of air quality assessment shall be implemented (p.4). Moreover, the urban scale as key policy arena is stressed, and defined as ‘agglomeration’, in which more than 250.000 people live, or a particularly high population density is found (p.6). Madrid has been designated as such zone which laid the foundation to the Madrid Central policy as a measure towards improving air quality (Vedrenne et al., 2015). The assessment in urban areas shall be done in representative locations of the city (‘urban background location’), which show the average exposure of the urban population (European Commission, 2008, p.5), which in Madrid’s case is *Plaza Carmen* in the Madrid Central area (Izquierdo et al., 2020).

The standardised assessment of air pollutants follows four key evaluations, namely *limit value*, *target value*, *alert threshold* and *critical level* (European Commission, 2008, p.7). Based on these definitions the severity of air pollution is evaluated which consequently leads to policy measures or eventually sanctions. ‘Limit value’ refers to the minimum level of air quality which is required in the entirety of the EU’s territory. ‘Target value’ refers to values which states, or zones, can determine themselves for more ambitious aims. ‘Alert thresholds’ are emergency limits for short exposures, such as in air pollution peaks, where zones must enact action plans to limit phases of dangerous pollutant levels. Finally, ‘critical level’ refers to the air quality necessary for the survival of ecosystems. All four different levels require different strategical approaches defined throughout the directive (ibid.).

The proceeding section of the directive lays out the assessment and measurement techniques in the air quality zones for pollutants such as nitrogen dioxide and particulate matter (Art.5-11, p.6). Thereafter, the next set of articles specify the limit values for specific pollutants (Art.12-22), which

[...] Directive 2000/69/EC of the European Parliament and of the Council of 16 November 2000 relating to limit values for benzene and carbon monoxide in ambient air;

Directive 2002/3/EC of the European Parliament and of the Council of 12 February 2002 relating to ozone in ambient air;

Council Decision 97/101/EC of 27 January 1997 establishing a reciprocal exchange of information and data from networks and individual stations measuring ambient air pollution within the Member States.

are elaborated upon in the Annexes. Due to its importance in understanding the effects of the directive to Madrid Central, the next paragraph details the specific measurements at the case of nitrogen dioxide, whose breaches have led to the infringement procedure of the Commission (European Commission, 2017b).

In the case of nitrogen dioxide (NO₂), Article 13 (European Commission, 2008, p.8) defined that values are specified in Annex XI and compliance to said values are specified in Annex III. There are two defined limit values for NO₂, the hourly average and the calendar year average (p.30). The limit value for the hourly average for NO₂ is 200µg/m³ (micrograms per cubic meter). However, due to fluctuations in the climatic circumstances the Directive provides that this value can be exceeded for a maximum of 18 days in a calendar year. Regarding the calendar years average, the directive prescribes 40µg/m³ without any exceedances. The Directive moreover establishes a margin of tolerance, namely 50% starting from 1999 and decreasing every year to achieve a zero-percent margin of tolerance on January 1st, 2010. Moreover, the last detail the directive mentions for the specific pollutants is the final time the limit values must be reached, which in the case of nitrogen dioxide is also January 1st, 2010.

This section describes the enforceable limit values which must be upheld in the whole territory of the EU. The other values prescribed by the directive are 'alert thresholds' which are particularly dangerous to human and ecological wellbeing and activate short term action plans. Defined in Annex XII, the alert threshold for the exemplary pollutant nitrogen dioxide in this case is 400µg/m³ measured over a time of three consecutive hours at the measuring stations representative of a zone (p.32). As defined in the main text, the conformity to the limits and thresholds for NO₂ can be postponed for five years if zones can provide a strategy to achieve them with a new deadline, which the Commission assesses, as in the case of Madrid Central and its successor Madrid360 (p.10). This measurement for specific pollutants is the basis for the Directive's objective to improve air quality throughout the EU, and hence operationalises the objectives laid out in the Commission's air quality strategies.

The successive chapter of the Directive elaborates on the 'plans' of the air quality zones, which are specific policies that address specific pollutants and their sources in case of exceedances of limit values or target values (Art.23-25, p.10). In the case of pollution peaks, short term plans shall be drafted to limit the extent of pollution period, such as mobility restrictions (p.11). These plans must be publicly available, transparent, and will be assessed and shared throughout the EU to facilitate best practice sharing (ibid.). The final segment of the directive (Art.29-33) lays out that penalties for non-compliant zones which are decided by the MS but must be proportionate, effective and dissuasive (p.13).

As mentioned above, the Directive 2008/50/EC on ambient air quality and a cleaner air for Europe is the main legislative framework for air quality policies throughout the EU. It has been the basis for comprehensive action on air pollution and has moreover sparked debates around (urban) mobility throughout the territory. As such, the Directive is particularly important in understanding the policy processes that have shaped Madrid Central. It possesses a clear multiscalar framework which serves as the basis for the improvement of air quality in the established subnational air quality zones. Moreover, the Directive justifies the supranational engagement on the issue, whilst leaving leeway to the diverse political solutions to the commonly shared problems. It hence acknowledges the complex social, political and ecological specificities of the European regions and urban areas.

To conclude, the Directive lays foundation for comprehensive action on air pollution on multiple scales whilst leaving the concrete measures for other governmental scales to decide. In Madrid, this has been accomplished by the Plan A and its related Sustainable Mobility Ordinance.

II. Ordenanza de Movilidad Sostenible

The Sustainable Mobility Ordinance is the legal document which has introduced the Madrid Central LEZ (ANM2018/45). The ordinance was published in June 2018 and was formally accepted by the Madrid city-council plenary in October 2018 (Ayuntamiento de Madrid, 2018b). The document repeals the former *Ordinance on Mobility* established in 2005. The ordinance introduces the city's new mobility policies in a total of 132 pages and 250 articles in four thematic 'books'.

The document reiterates the strategic approach to air pollution and its objectives derived from the Plan A in its preamble. The section stresses the importance for planetary (urban) sustainability, by noting that cities will house 80% of all people on earth by 2050 (p.2). Based on this argument, the document reinstates Madrid's commitment to the Paris Agreement and the European *Strategy for Low Emission Mobility* (ibid.). The document argues that the shift in mobility policies are connected to a variety of societal opportunities. These include enabling individual rights by protecting public health, safeguarding and improving air quality and the urban environment, as well as supporting economic activity, social and technological progress and heritage protection (p.2-3).

The ordinance materialises the objectives set out in the preamble and Plan A to achieve low-emission urban mobility, multimodality and a reduction of the health hazard caused by transport (p.2). The document moreover transposes the provisions of the Spanish Law on Sustainable Economy (Gobierno de España, 2007) and the European Directive 2008/50/EC (p.3). Recognising the societal objectives and multiscale legislation, the ordinance formulates five main objectives (p.3). First, improving road safety and the coexistence of different transport modes. Second, protecting public health through improving air quality and implementing the Plan A. Third, promoting environmental sustainability through facilitating soft and public mobility. Fourth, to harmonise uses of public space and rationalise parking space. The fifth and final objective is the modernisation of the city's mobility regulations considering new uses such as micro-mobility. These aims guide the legal provisions of the ordinance and plan to ensure the "present and future of sustainable mobility" (p.3).

Moving forward, the ordinance leaves the argumentative realm and enters the specific legal provisions. The most salient segment for the research is the legal definition of the LEZ Madrid Central (Art.21-24, p.12-15). Within the set of articles regarding the policy, the ordinance defines LEZs as delineated geographical areas where special measures of access control, parking and traffic are introduced to reduce emissions from a set of vehicles (p.12). Subsequently, the intentions of the Madrid Central LEZ are defined. Namely, first, to reduce levels of environmental pollutants and improve the quality of life for its residents, second, to promote sustainable mobility, characterised as public transport and less polluting vehicles, and third, to improve pedestrian access. With fifteen sub-articles, Article 23 establishes Madrid Central (p.12-15). The first segment of the article names the LEZ Madrid Central and restates its relation to the integrated municipal air quality and climate change strategy (p.12-13). Secondly, the geographical boundaries of the LEZ are established which constitute the 4,72km² in which the policy applies (see Annex 1). Thirdly, the vehicles are established which remain eligible to access and park in the area, which includes

inhabitants, public safety and health authorities, in addition to other municipal vehicles such as waste services and public transport (p.11). The proceeding paragraphs establish the LEZ's control mechanisms, through enabling policing and video surveillance in the perimeter of the area, as well as potential suspensions thereof (Art.23.3.6, p.15). Lastly, the possibility to extend the access restrictions to other areas within the city is established, if deemed necessary with regards to road and public safety as well as the "integrity of public and private spaces" (Art.24, p.15).

Besides of the above-mentioned articles (Art.21-24), the ordinance regulates specificities of Madrid Central throughout the document. For instance, the ordinances' provisions on road discipline regulate municipal penalties and economic sanctions (p.112). Authorities may tow vehicles who illegally enter the LEZ (Article 230.3, p.115). Moreover, ignoring the environmental restrictions in Madrid Central, and entering with a high pollutant vehicle, is considered a very serious breach and may lead to sanctions between €1000 and €3000 (Art.241, p.124). The environmental badges and hence the accesses requirements for vehicles are detailed in the ordinance's final section (p.127-132). The final provisions moreover specify the ticketing timeline, in which devices shall initially only inform the recipients about the scope of the LEZ, before violators are sanctioned two months after the ordinance's implementation (p.126).

Besides of Madrid Central, the ordinance provides several related policies concerning sustainable mobility and air quality regulations, which are briefly mentioned here for the sake of completeness. For instance, speed limits within the municipal boundaries are reduced to 30km/h for the majority of Madrid's street network (Art.17, p.10). The speed reduction, which apply to roughly 80% of all streets in the municipality, are expected to reduce mortality in traffic accidents and environmental pollution (Medina, 2018b; Gobierno de España, 2018, p.10). Moreover, the ordinance introduces short term action plans to address high pollution periods (Art.35, p.21-22). In order to curb air pollution peaks, the city can restrict access to certain areas, reduce speed limits, limit logistical traffic and parking access until the air quality is within legal limits (ibid.).

In summary, the ordinance materialises the policy approach which was detailed in Plan A and forms them into legal provisions. Drawing from other governmental scales, the ordinance formulates the legal articles which effectively establish the LEZ at the centre of the research. The ordinance shows the effects of multiscale governance and larger societal concerns, which at the local scale, produce concrete measures, such as the LEZ of Madrid Central. Hence, the discourse materialises at the neighbourhood level, changing the manner Madrileños are moving through their city.

5. Discussion of the Results

In order to make sense of the documents' contributions, this section compares the analysis' results considering the theoretical contributions presented in section two. The documents represent the official interrelations of urban sustainable mobility policies, air quality policy and how they are shaped on multiple scales throughout the governance processes. Hence to reiterate, starting on the supranational scale, the Commissions communication in addition to the Directive 2008/50/EC form the EU's air quality approach which is intimately tied to the sustainable urban mobility policies in several European cities. The EU's documents have moreover formed the basis for national air quality strategies such as the Spanish *Plan Aire II*. The national scale has relayed the relevant guidelines to the subnational scale, the ACs and finally the municipalities.

Arriving at the local scale, the Madrilenian *Plan A* then presents the integrated municipal approach to air quality policy and climate change. It formulates tailored solutions regarding the local scale and its political, environmental, and spatial specificities. Here larger societal debates around sustainability, climate change and air pollution are then concretely applied at the neighbourhood level through Plan A and the Sustainable Mobility Ordinance. Albeit initially setting out to address the informal political processes surrounding Madrid Central, this research has benefitted from the policy document analysis to further the understanding of how specific local mobility policies are shaped by larger societal narratives and supranational governance processes.

As established in the literature review, air pollution is a uniquely transboundary and multiscalar policy issue in which a multiplicity of governmental actors is involved (Wilde, 2010; Kuklinska et al., 2015). The Commission explicitly argues that cities are key areas of action against the ramification of air pollution, as they house the majority of the European population, and additionally, experience the most severe issues in the field (Halpern, 2014; UNEP, 2010; European Commission, 2017b). The argumentation showcases the increased attention the EU policy makers attribute to urban areas and municipal politics. Hence, despite of the lacking competences in urban mobility policy it is recognised as key to improve environmental and public health circumstances for a significant number of European citizens (European Commission, 2016, 2017b; EEA, 2018a).

Additionally, the policy processes that have steered Madrid Central have shown the flexibility of the framework regulation concept, in which general societal aims argued for by the supranational institutions and specific policy solutions are found on the national and subnational scale (Treib et al., 2007). Vice versa, the local strategy addresses the influences it has received from supranational guidelines, and the governance mechanisms it uses to improve policies on the matter, such as transnational municipal networks and policy recommendations (Halpern, 2014). However, the European policy landscape is by no means post-national per se, as the national scale is the official recipient of directives in the European institutional structure. Moreover, Spain has been an important level within the processes in narrowing down the European strategies towards sectoral specific measures, in addition to defining the appropriate subnational levels to which most policies are relayed.

The analysis has moreover scrutinised the underlying objectives and motivations which lead actors to engage on the issues of air pollution and mobility. It has done so to reflect upon the narrative structures of the documents and their ideas about urban sustainable mobility policies. The analysis points out the major consistencies between the documents. All documents emphasise the detrimental effects of air pollution for public health, which forms the core of air quality policy. Being tied to the highest number of premature deaths in Europe, air pollution is a pivotal field in which political actors can improve life expectancy and general health of the population (Nieuwenhuijsen & Khreis, 2016; Vineis et al., 2016; EEA, 2018b).

Besides of public health, a core driver to act upon pollution is the environment and the mid- to long term effects of climate change. This is especially pronounced at the European scale and the Madrilenian scale, which argue for integrated responses to GHG emissions and ambient air pollutants, which often share the same sources of carbon intensive socio-economic practices, such as car-based mobility (Isaksson et al., 2017; Lebrusán & Toutouh, 2020). The combined opportunities in improving health and the environment are expected to create a better quality of life. In addition, economic costs and benefits are especially apparent on the European scale. The

Commission's strategy points out the opportunities of moving towards a low-carbon economy, by cutting societal externalities, and embracing markets and jobs in 'sustainable growth' (Domorenok, 2019; European Commission, 2016, 2018a). The economic argument is absent in the other documents. Vice versa, the motivation of legal compliance to the European legislative framework is frequently occurring in the Spanish and Madrilenian documents. Hence, more idealistic objectives are accompanied by legal compliance, which is enforced by potential economic sanctions.

Throughout the documents, mobility is a consistently recurring theme which is framed both as one of the most significant contributors to the current issues in air pollution and a viable solution to them. Respectively, most measures introduced within all five documents are related towards changing mobility patterns within and beyond urban centres. This argumentation reflects much of the academic debate and the political consensus on the supranational sphere (WHO, 2015, 2016; Banister, 2011; Nieuwenhuijsen & Khreis, 2016; Nieuwenhuijsen et al., 2019 etc.). The Commission stresses the role urban access vehicle restrictions and sustainable urban mobility plans have in order to achieve these objectives (European Commission, 2016, 2018). This is echoed by the Spanish scale, in which Plan Aire II explicitly states its aims at facilitating alternative means of transport to the car, and thus supporting local transitions towards more public and soft mobility systems (Gobierno de España, 2017). It does so, amongst others, by referring to the EU's objectives in decarbonising mobility (European Commission, 2016). Besides of shifting the modal share of urban mobility systems, the Spanish and European strategies aim to boost the electrification of private vehicles and public vehicle fleets. Preferential treatment to decarbonised vehicles is also reinstated by the Madrilenian Plan A and the ordinance, which ultimately implemented the city's mobility shifts (Ayuntamiento de Madrid, 2014, 2017, 2018). A transition towards a more sustainable mobility system is also the key approach the Plan A offers its readers. Its aim is to reduce the usage of private motorised vehicles and improve the situation for public and soft mobility. At the centre of the mobility shift is the primary research object of this thesis, the LEZ Madrid Central.

Connections to Madrid Central and the trickling down of the policy

The purpose of the policy document analyses is to shed light upon the policy of Madrid Central, which was lauded as one of the most ambitious mobility policies in European cities in the last years and is uniquely influenced by supranational decision making. Hence, the next few paragraphs are used to further elaborate on the connection the documents share with the LEZ and in how far they reflect upon multiscalar governance processes in contemporary urban mobility politics.

To start with the oldest document, and arguably the most influential on the European scale, the Directive 2008/50/EC must be mentioned. Albeit dating back to the late 20th century, European air pollution policy has gained traction in the 21st century which is especially visible with the directive at hand (Wilde, 2010). It defines the scalar character of air pollution policy and argues that it has to be dealt with on the relevant level, which for Spain was especially in the major metropolises of the country, specifically Madrid which has experienced poor air quality for decades (Teffer, 2019b; Vedrenne et al., 2015; OECD, 2015). The directive has led to the designation of air quality management zones (European Commission, 2008; Vedrenne et al., 2015). These zones have formed the basis for a meaningful measurement of air pollution around different thresholds and consequentially formed the basis for local policy solutions (Lebrusán & Toutouh, 2020). The form

of a framework regulation has provided leeway for other scales to decide upon the most promising measures to combat air pollution, which has resulted in an increased attention for mobility policies – ultimately creating the framework for Madrid Central as a response to Madrid’s air pollution issues (Lebrusán & Toutouh, 2020; Izquierdo et al., 2020). Moreover, this legislative document has identified nitrogen dioxide and particulate matter, mainly caused by road traffic, as key pollutants which must be reduced (Ayuntamiento de Madrid, 2018a). These pollutants have later led to the infringement procedures against Spain, which has resulted in increased political pressures in Madrid (European Commission, 2018c). The legitimisation for these infringement procedures have been addressed in the Clean Air for All strategy of the European Commission (European Commission, 2018b). The Directive is mentioned in each other document analysed above and has widely influenced their shape and thus consecutively Madrid Central.

The importance of the supranational scale for the creation and maintenance of Madrid Central is further visible in the Commission’s strategy (European Commission, 2018a). The document reinstates the EU’s role on the policy field and its increasing attention to urban politics and policies. Regarding urban mobility, the Commission indirectly points to Madrid Central, through stressing the importance of LEZs and urban vehicle access restrictions (European Commission, 2018a). It moreover lists the support cities can rely on through policy networks, recommendations, guidelines and certain budgeting tools in order to achieve urban air pollution objectives. Additionally, sustainable mobility transitions are mentioned as the key to successful reductions of pollution in urban centres and the mitigation of climate change (European Commission, 2018a). Local air quality plans and sustainable mobility plans, here are mentioned as successful tools in urban policy making, which in Madrid was introduced through the ordinance and the related Plan A.

Entering the Spanish scale, one can notice a consistency in approaches. The Plan Aire II is primarily shaped by the regulatory framework of the European legislative documents and relays the measures which are officially addressed to MS to the subnational authorities (Gobierno de España, 2017; European Commission, 2008). The national scale is then an administrative bridge between supranational actors and local and regional actors which determine the specificities of the policy responses to large supranational issues such as climate change and air pollution (OECD, 2015). Regarding Madrid Central, the focus on mobility transitions away from the usage of private cars towards soft and shared mobility options is mentionable, which is consistently shared by the academic debate presented above (Gobierno de España, 2017).

Arriving at the municipal scale, the connections of the documents to Madrid Central are most apparent. Plan A argues for, and contextualises, Madrid Central, effectively serving as the basis for its introduction into municipal law (Ayuntamiento de Madrid, 2017). The document developed by the city, aiming at combatting climate change and air pollution, has the LEZ at its strategic centre. One can see a trickling down of arguments and assessments found in the documents and forming concrete policies at the scale of the municipality. Based upon the European impulse on air pollution policy, the proposed measures in the field of mobility are then finalised by the Sustainable Mobility Ordinance have determined the city’s LEZ and its related mobility policies (Ayuntamiento de Madrid, 2018a). The document can be regarded as a conjunction of the legislative framework as well as the strategies on all three scales debated here, forming them into a set of legal articles establishing Madrid Central.

The analysis of the documents has shown that meta-principles and narratives on sustainability and climate change are altered and transformed on each scale (Domorenok, 2019). The analysis of the Madrid Central policy and the multiscale processes influencing it, has shown the increasing impact EU policy making has on urban areas. However, considering the strikingly coherent argumentation for the need of sustainable urban mobility, and its relation to climate change and air pollution, one might also question the argument of multiscale influence. Albeit the documents refer to each other frequently, the increased attention in the last years on environmental politics, especially the climate crisis, have created an increased pressure for all governmental scales to act (Woodcock et al., 2009; Lucas, 2012; Appleyard, 1980). Hence, rather than mutual influence, the pressures for mobility transitions which have influenced Madrid Central might also be described as *zeitgeist*. Additionally, the conservative administrations of the municipality have introduced Madrid Central-like policies with the residential priority areas. Moreover, the terms multiscale governance and multilevel government indicate a partnership between the supranational and the local level (Hooghe & Marks, 2001). However, from the analysis, it cannot be finally established in how far the circumstances that influence Madrid Central can be considered a partnership per se (Günter, 2011a, 2011b). Due to the legal hierarchy, the EU's regulatory framework strongly steers the outcomes at the municipal scale, and hence the partnership, as conceptualised within the document analysis, resembles more classical forms of top-down government principles (Günter, 2011a). Similarly, without going into a normative reflection upon it, the current administration has yet been unsuccessful in challenging the policy precisely because of the hierarchy within the governance processes establishing Madrid Central.

6. Concluding Remarks, Limitations and Further Outlook

To reiterate, this thesis addresses to what extent current multiscale processes influence local sustainable mobility transitions in European cities (RQ1). To do so, this thesis sets out to assess in how far the EU's engagement, through air quality policy, has shaped the low-emission zone of Madrid Central (RQ2). In order to address the urban governance of European cities in the 21st century and the issues thereof, this research has conducted a distinctly multiscale analysis. It has done so to account for the increasing complexities of urban governance, which are influenced by multiple public and private actors on all scales of government (Batterbury & Fernando, 2000; Rozenblat et al., 2018; Sassen, 2004).

In summary, this thesis contributed to understanding to what extent supranational institutions influence local sustainable mobility policies at the case of Madrid Central. The policy document analysis conducted by this thesis has provided valuable insights into the official representation of the policies through the five documents on different governmental scales. Each document has shaped Madrid Central in its current form, with overlapping policy objectives and solutions. The current sustainable mobility policies' multiscale character shaped by air pollution policy, is visible throughout the analysis. Moreover, the motivations that lead to such changes are cohesive with the focus on public health improvements as well as curbing detrimental environmental effects and combat climate change. In addition, the European scale attributes economic costs and benefits vice versa to improvements of air pollution and urban mobility. In turn, the national and subnational institutions share the objective to comply to the legal framework the EU has set up. The legislative form of European air quality policy has offered considerable leeway for tailored solutions to local

contexts and has produced a variety of mobility policies. Albeit not exclusively, all five documents share the view of the importance of mobility transitions in improving air quality.

The policy of Madrid Central and its legislative and strategic-narrative framework operationalise the multiscale strategies in environmental politics at the local scale. Through the process, larger motives of combatting climate change, creating sustainable growth and fostering public health, concretely materialise in the central neighbourhoods of the Spanish capital. However, as argued above, sustainable mobility policies currently get enacted throughout the continent. As there is an increasing awareness on the effects of car-based urban systems, shifts therein might be the *zeitgeist*, and as such, the specific impact of multiscale governance relation cannot be definitely established. Moreover, the example of Madrid Central and its governance processes has also shown a clear hierarchy between the scales, and hence more classical approaches of top-down governance. Nonetheless, as this research shows, Madrid Central is an intriguing example on the multifaceted processes that influence our cities in the present and foreseeable future. Politics and policies attempting to solve supranational and transboundary issues, such as climate change and air pollution, increasingly get decided upon in processes that span all governmental scales, from the supranational institutions to the municipalities.

Lastly, to further scrutinise the research questions, this thesis has conducted a comprehensive theoretical analysis at whose end two hypotheses were derived. These were then assessed through the policy document analysis at the core of the research. Hence, to come back to the hypotheses presented in the methodology, the analysis has largely confirmed the first hypothesis. The governance process shaping Madrid Central can be regarded as a fruitful engagement between supranational and local governments. In fact, all policy documents analysed as part of this research, have recognised the importance to address the transboundary issues that cities are faced with nowadays with specific local policies. Channelled through different scales with multifaceted motivations and competences, larger societal interests can in fact be partially dealt with through such multiscale governance constellations.

Regarding the second hypothesis some objections remain due to the analytical limitations. In fact, one can establish through the research that the engagement of the supranational institutions has kept the Madrid Central policy in place against considerable political pressures. Progressive forces within civil society, local courts as well as actors from other political scales have made it difficult for the current administration to change the policy. Such multifaceted processes require a more extensive analysis on the informal political processes that occur aside of the official documentation thereof.

Limitations and Further Research

Due to the coronavirus pandemic, this research as well as the policy field of urban mobility has been decisively changed. The initial core research method included on-site expert interviews in Madrid, however, due to the pandemic, this source of data was unavailable. The pandemic has moreover shifted patterns of urban mobility in many European cities with falling numbers in public transport usage and rising numbers of cyclists, pedestrians and automobiles. Additionally, the mortality rate among Covid-19 patients, as early studies show, is tied to air quality, with a lower lethality rate in areas with low pollution levels. As a response to the new demand patterns, several European cities have reimagined their mobility systems accordingly, and have catered to the new realities with new spaces for pedestrians and cyclists, similar to Madrid Central.

Within the new realities created by Covid-19, what is now remarkable about Madrid Central, are the continued tendencies by the current administration to revert the policy despite of its successes and the necessities in the current circumstances. Being one of the only cities to revert such policies in the times of Covid-19, the city's mobility policies by the current administration have become remarkable for other reasons. It thus remains to be seen which direction European urban mobility transitions take in face of the new global challenges. As the political processes around Madrid Central are ongoing, further changes necessitate further research on the case.

As this research has focussed on the governance side of the policy processes, important issues such as the socio-economic consequences of the policy have been under researched. Significant changes within the central neighbourhoods of Madrid, may have led to increased processes of gentrification and displacement. On a similar note, the policy can also be analysed regarding its discrimination against citizens with a weaker socio-economic background who rely on older, more environmentally friendly vehicles to commute to their work in the city centre, and cannot afford new, less polluting vehicles. Hence, further research may be insightful on the consequences of the policy on citizens living and or working in the neighbourhoods in central Madrid. Additionally, further research could regard the informal, extra-institutional political struggles of the actors involved in creating the policy aside of its official representation in policy documents. An informal approach could further clarify the wider streams of political engagement and the impact local groups have had on the final shape of the policy.

To conclude, Madrid Central offers a fruitful case for researchers interested in topics as varied as current sustainable mobility policies in European cities, novel governance processes involving multiple scales, as well as the political struggles and consequences of such ambitious policies at the urban scale. This thesis has addressed the gap on the governance processes shaping Madrid Central. Being based upon theoretical research, the thesis can a basis for more extensive research on the informal political intricacies. Additionally, this research proposes a comparative case study in other European cities and their relation to the supranational legislative framework. Spain has been one amongst a handful of European Member States which have been addressed by the Commission. The policy of Madrid Central is characterised by its complexities, its multifaceted influences and consequences, and hence remains an intricate example for further academic work in the wider field of urban studies.

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8. Annex

List of Abbreviations

AC	Autonomous Community
CAFE	Clean Air for Europe
CJEU	Court of Justice of the European Union
DG	Directorate General
DGT	Dirección General de Tráfico
EAP	Environment Action Programme
EEA	European Environment Agency
EC	European Community
EU	European Union
GDP	Gross Domestic Product
GHG	Green House Gases
LEZ	Low Emission Zone
MS	Member States
NGO	Non-Governmental Organisation
NO ₂	Nitrogen Dioxide
OECD	Organisation for Economic Co-operation and Development
PM _{2.5}	Fine Particulate Matter
PM ₁₀	Coarse Particulate Matter
SDG	Sustainable Development Goals
TFEU	Treaty on the Functioning of the European Union
UNEP	United Nations Environment Programme
UN	United Nations
WHO	World Health Organisation

Figure 1: Madrid Central Geographical Delineation

CENTRAL ZERO EMISSIONS ZONE

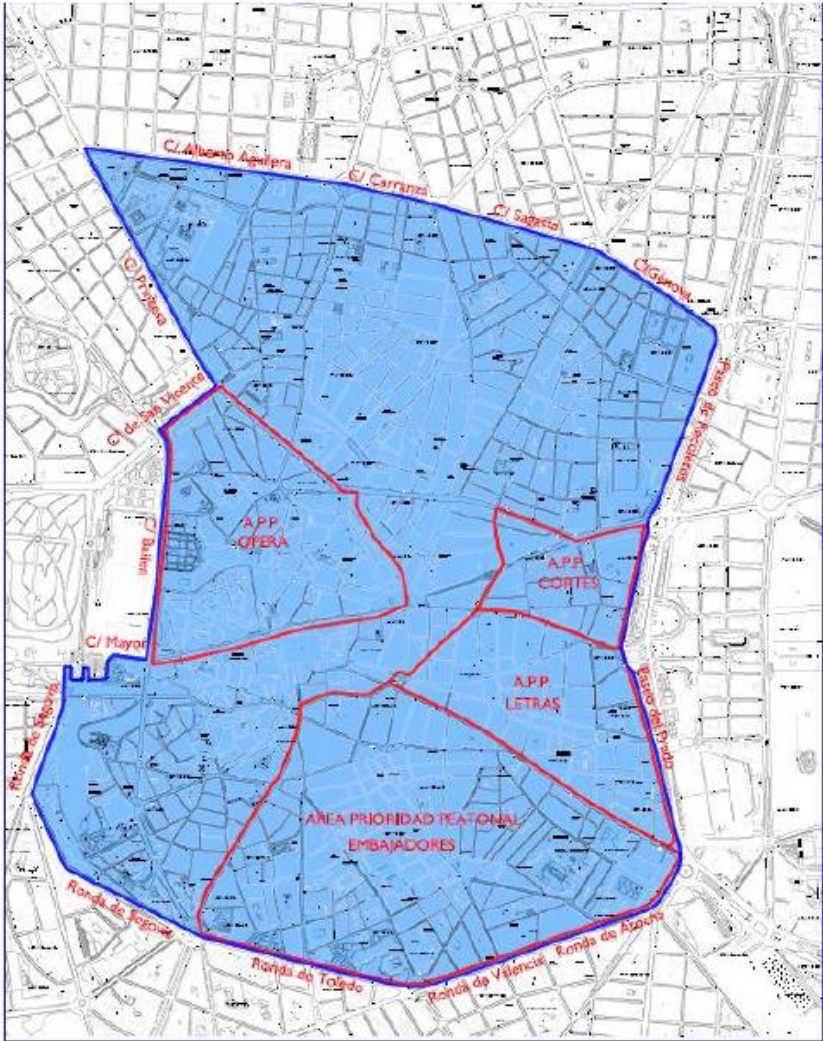


Figure 1: Madrid Central (Aynuntamiento de Madrid, 2017)

Figure 2.: Development of the European Urban Agenda

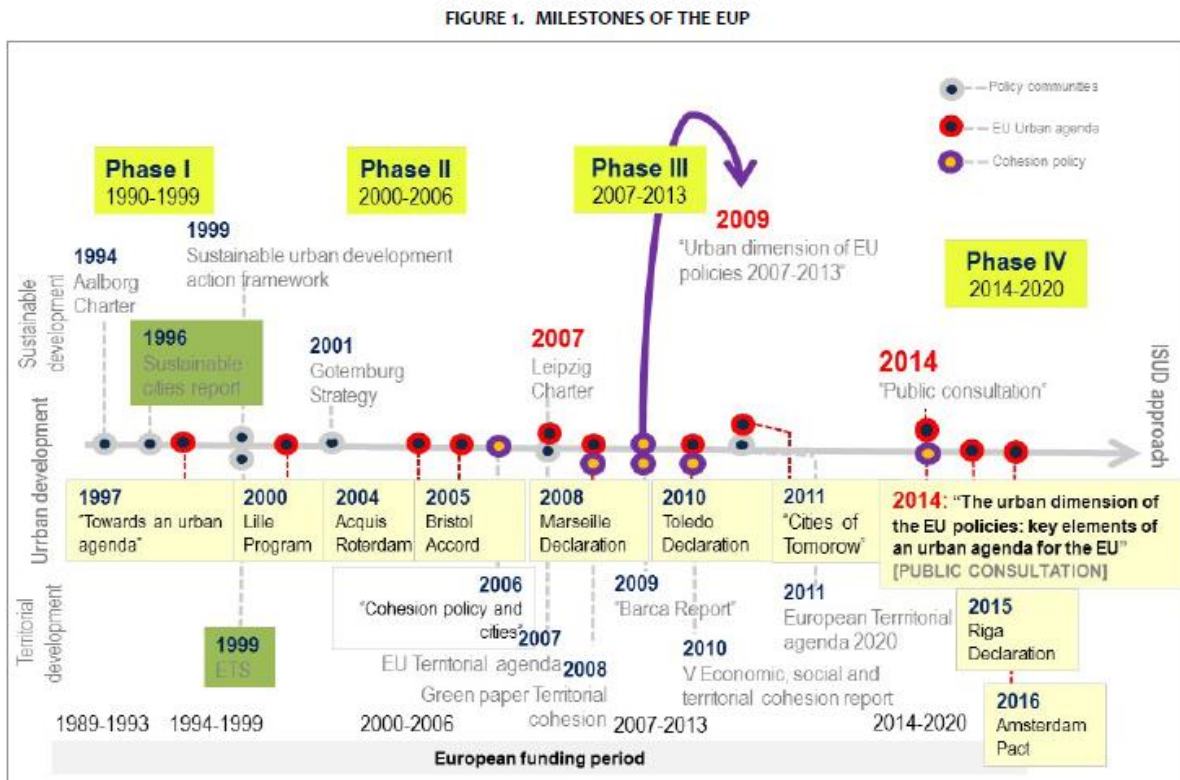


Figure 2: Medina & Fedell (2015, p.6)

	European Union	Spain	Madrid
1996 September	Air Quality Framework Directive (repealed by 2008/50/EC)		
2004 December	Directive 2004/107/EC on ambient air pollutants		Residential Priority Areas are established in Cortes (2004), Letras (2005), Embajadores (2006) and Opera (2015)
2007 November		Ley 34/07 on Air Quality and Protection of the Atmosphere	
2007 September	Green Paper Towards a new culture for urban mobility		
2008 May	Directive on Ambient Air Quality (2008/50/EC) published		
2009 September	Action Plan on Urban Mobility		
2010 June	Directive 2008/50/EC transposition phase concludes		
2011 March	White Paper Single European Transport Area	Law on Sustainable Economy	
2013 April		Plan Aire I	
2013 December	EU Clean Air Policy Package Urban Mobility Package	Plan Azul+ (Comunidad de Madrid)	
2015 December	Paris Agreement		
2016 July	European Commission Strategy on Low Emission Mobility		
2017 September 21			Approval of Plan A
2017 December		Plan Aire II	
2018 August 5			Approval of Ordinance of Sustainable Mobility
2018 October 29			Agreement by Governing Board for Madrid Central
2020 May		Law on Climate Change and Energy Transition	
2018 November 30			Madrid Central goes into Effect
2019 January 1			Madrid Central Fining System goes into Effect
2019 May 25			Municipal Election leading to Almeida Administration
2019 July	Commission refers Spain to CJEU		Moratorium on Fines goes into Effect (1.7) Moratorium on Fines gets annulled by 24 th local court (8.7)
2019 September			Madrid360 presented
2020 June 17			Local courts (7 & 24) reaffirm continuance of Madrid Central
2020 July 27			Annulment of Madrid Central announced by Madrid Supreme Court

Table 1: Timeline (Source: Authors Own, Data upon request)