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Understanding the Policy Integration Challenges of Sustainable Urban Mobility in the Context of Rapid Decarbonisation

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Abstract

Given the state of the climate emergency, European Union (EU) cities must find innovative ways to achieve a sustainable and decarbonised urban mobility trajectory. This requires integrated and cross-sectoral approaches that enable all sectors influencing such mobility to contribute to this goal. Building on the concept of the climate-connected city and drawing on an extensive empirical investigation of two Dutch cities (Rotterdam and Maastricht), this study reflects on how decarbonisation targets are integrated with other sustainability objectives across all policies and levels involved in reconfiguring mobility towards an environmentally sustainable model. The study finds that spatial development tools and processes, in combination with regulatory instruments imposing strict limits on emissions, can strengthen cross-sectoral support for the behavioural changes needed to decarbonise urban mobility. However, this integrative dynamic may be countered by local economic actors and by national and EU economic and fiscal instruments, whose narrow focus on reducing vehicle emissions and expanding road capacity forces cities to dilute their sustainable mobility policies. This suggests that in order to accelerate the decarbonisation of urban mobility, these instruments should be aligned with a broader set of sustainability goals and solutions and be combined with greater attention being given to the urban dimension into national and European transport policies.

Keywords: Decarbonisation; law and governance; sustainable urban mobility

I. Introduction

Urban mobility generates important benefits, but is also a cause of concern in our cities. The still predominantly car-based system is a major cause of air pollution and greenhouse gas (GHG) emissions and generates high costs in terms of congestion and accidents, besides negatively influencing the quality of the living environment in cities.[1] In the European Union (EU), cities and other government levels have long advocated a shift to sustainable urban mobility. This paradigm relies on integrated and cross-sectoral approaches to tackling the multiple social, economic and environmental issues generated by transport, to

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[1] See European Environmental Agency, *The First and Last Mile – The Key to Sustainable Urban Transport* (Transport and environment report 18/2019, 2019).

transform our mobility systems and practices into an environmentally and socially sustainable pattern.[2]

Given the present state of the climate emergency, promoting sustainable urban mobility has become even more urgent and challenging. Because transportation today accounts for nearly 40% of GHG emissions in cities, drastic reductions in emissions are needed to meet the Paris Agreement[3] and other ambitious climate and environmental goals set at the EU and at the national level.[4] As in other areas, it is therefore imperative for cities, including those at the forefront of the sustainability transition, and all government levels to conceive of climate neutrality as a goal with transformative force and to identify innovative ways to intensify and accelerate the trajectory towards sustainable, zero-emissions mobility. This challenge is even more urgent since, despite manifold efforts and commitments, there are no clear signs that cities are promoting more sustainable modes of transportation, as the EU Court of Auditors recently pointed out.[5]

Scholarship has so far developed a fairly broad understanding of the institutional, economic and behavioural barriers and conditions to promoting sustainable transport. Yet, given the present state of the climate and environment, action is needed to hasten the required changes and drive a sustainable and decarbonised urban mobility trajectory. In this sense, repeated calls have been made to sharpen our understanding of the involved governance processes and structures, both within cities and across government levels, to accelerate this trend and promote a modal shift in urban mobility.[6]

Responding to these calls, this article reflects on the challenges and complexities of multi-objective governance of sustainable urban mobility in the context of rapid decarbonisation in the EU. It addresses the question how climate change is integrated with other sustainability goals in the design of transformative policies that accelerate the decarbonisation of urban mobility. Building on Bulkeley's concept of climate-connected cities,[7] the article focuses particularly on three dimensions of policy integration – policy frames, instruments and procedural coordination – to examine how climate change is linked to other sustainability goals in the mobility-related policies formulated by the different government levels. As such, the article advances research on urban mobility governance, enhancing our understanding of the dynamics and factors that support or hinder transformative measures to intensify the decarbonisation trajectory in urban mobility.

For specific insights, the article empirically examines mobility policies in two Dutch cities: Maastricht and Rotterdam. Both cities are rooted in the same administrative context, in which major political events have forced the national government to champion the zero-emissions objective. At the same time, each city displays different geographic and socio-economic characteristics and exemplifies one of the EU's two main groups of cities (small to medium-sized and large cities).

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[2] See the definition from D Banister, "The sustainable mobility paradigm" (2008) 15 Transport Policy 73.

[3] Paris Agreement 2016, Dec. 1/CP.21 Annex, UN Doc. FCCC/CP/2015/10/Add.1 ("Paris Agreement").

[4] See in this sense the call of the European Commission in its latest European Green Deal, Commission Communication on the European Green Deal (2019) COM(2019) 640 final, 10.

[5] European Court of Auditors, *Sustainable Urban Mobility in the EU: No Substantial Improvement Is Possible without Member States' Commitment* (Special Report 06/2020, 2020, 7). See a similar account in Clean Cities, *Benchmarking European Cities on Creating the Right Conditions for Zero-Emission Mobility* (2022) <https://cleancitiescampaign.org/wp-content/uploads/2022/02/Clean-Cities_-City-Ranking-Rating-briefing-2.pdf> (last accessed 20 February 2023).

[6] P Goodwin and C Curtis, "Sustainable transport: looking back – looking forward" in C Curtis (ed.), *Handbook of Sustainable Transport* (Cheltenham, Edward Elgar 2020) pp 434–46.

[7] H Bulkeley, "Climate changed urban futures: environmental politics in the Anthropocene city" (2021) 30 Environmental Politics 266.

After this introduction, Section II of this article presents a theoretical framework based on the existing literature on sustainable mobility and climate-connected cities. Then, Sections III and IV present, respectively, the methods and data and the empirical findings from the two Dutch cities. Finally, Section V reflects on the challenges and complexities hindering the integration process in urban mobility and develops lessons for unleashing contributions from all government levels to accelerate decarbonisation in the urban mobility field. The main argument is that spatial development tools and processes can strengthen the creation of a coalition of strategic actors to support the modal shift needed to decarbonise urban mobility, and their effectiveness is enhanced by regulatory instruments imposing stringent emissions limits across the board. However, this integrative dynamic can be opposed by local economic actors, as well as by national and EU economic and fiscal instruments, whose narrow focus on reducing motorised vehicles emissions while maintaining them as main transport mode forces cities to dilute their sustainable mobility policies. This suggests that in order to accelerate the decarbonisation of urban mobility, economic and fiscal instruments influencing mobility should be aligned towards broader consideration of climate and sustainability goals and be combined with paying greater attention to the urban dimension of mobility within higher government levels.

II. Sustainable urban mobility, decarbonisation and the need for policy integration

1. Sustainable urban mobility and climate change

Since it first emerged,[8] the concept of sustainable mobility has gained increasing attention in academic literature. In contrast to the car-enabling model of mobility, focused on minimising traffic time and congestion, this paradigm takes into account a broader set of economic, environmental and social objectives. Among these, several studies have addressed carbon emissions from mobility as a core concern.[9] Applying various theoretical perspectives (including behavioural economics,[10] practice theory[11] and socio-technical approach)[12] and using cities as their main analytical focus, authors broadly agree that the current mobility system is unsustainable.[13] They further identify a number of behavioural, institutional and technological reasons why it has been so difficult to reduce energy use and carbon emissions in transport.[14] To reverse this trend, scholars have examined the variety of solutions and instruments used by local governments to promote sustainable urban mobility and discussed how these are influenced by national[15] and EU policy

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[8] Banister, supra, note 2.

[9] See, among many others, D Banister, "Cities, mobility and climate change" (2011) 19 Journal of Transport Geography 1538; D Banister and R Hickman, *Transport, Climate Change and the City* (Abingdon, Routledge 2014).

[10] T Schwanen, D Banister and J Anable, "Rethinking habits and their role in behaviour change: the case of low-carbon mobility" (2012) 24 Transport Geography 522.

[11] M Watson, "How theories of practice can inform transition to a decarbonised transport system" (2012) 24 Journal of Transport Geography 488; F Meinherz and C Binder, "The dynamics of modal shifts in (sub)urban commuting: an empirical analysis based on practice theories" (2020) 86 Journal of Transport Geography 1.

[12] FW Geels, "A socio-technical analysis of low-carbon transitions: introducing the multilevel perspective into transport studies" (2012) 24 Journal of Transport Geography 471.

[13] D Banister, *Unsustainable Transport* (Abingdon, Routledge 2005); WR Black, *Sustainable Transportation: Problems and Solutions* (New York, Guilford Press 2010).

[14] FW Geels, R Kemp, G Dudley and G Lyons, *Automobility in Transition? A Socio-Technical Analysis of Sustainable Transport* (Abingdon, Routledge 2012); C Curtis and N Low, *Institutional Barriers to Sustainable Transport* (Abingdon, Routledge 2012).

[15] See, among the various measures affecting mobility and public aid programmes to subsidies cars in various national contexts, S Fol, G Dupuy and O Coutard, "Transport Policy and the Car Diide in the UK, the US and France: Beyond the Environmental Debate" (2007) 31 International Journal of Urban and Regional Research 802.

dynamics.[16] While broadly conceding that the systemic nature of mobility requires strong links to other sectors (in particular, land use) to address emerging problems,[17] along with a focus on the socio-economic and geographic conditions that influence mobility patterns, most authors emphasise the piecemeal nature of the steps to reduce mobility emissions, mainly due to limited societal support and path dependencies favouring incremental and technology-driven measures over other solutions.[18]

Although scholars have developed a fairly broad understanding of the barriers, conditions and solutions to reducing the climate impacts of transport, the present climate emergency, to which transport is a major contributor, brings to the forefront questions of how current decarbonisation ambitions (eg in the Paris Agreement and European Green Deal) can work to intensify the sustainable transition of urban mobility.[19] As in other sectors, studies emphasise that the scale and urgency of the challenge requires, rather than gradual actions, a paradigm shift to accelerate the necessary transformative change. In this sense, repeated calls have been made for a clearer understanding of the processes and governance structures with which to promote such change, both within cities and beyond.[20] Unresolved questions are, in particular, what governance solutions are needed to intensify these processes, which necessarily imply behavioural change, and how to move all policy functions and stakeholders in the same direction: towards a carbon-free future in mobility.[21]

2. Climate-connected cities and the challenges of policy integration

To contribute to addressing these questions and sharpening our understanding of the governance challenges and complexities involved in the shift towards sustainable urban mobility, this article draws on the concept of climate-connected cities developed by Bulkeley.[22] Focusing on the evolution of urban climate actions,[23] the author notes that today cities are rearticulating climate change as a systemic issue. Specifically, because climate change is increasingly recognised as deeply embedded in the working of our urban economy, infrastructure and the practices of daily life, cities' climate actions are expanding beyond GHG mitigation and adaptation alone towards targeting the systems and structures that make climate change possible. These emerging climate-connected responses address a mixture of concerns (eg biodiversity, consumption and social justice) and agendas (eg sustainability and economic development) in combination with climate

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[16] C Halpern, "Urban Mobility: What Role for the European Union? Explaining Dynamics of European Union Policy Design Since 1995" (2014) 22 European Planning Studies 2526; C Cavoli, "Assessing the impact of European Union policies on urban transport: a comparative analysis" (PhD thesis, University College London, 2015).

[17] Among the numerous analyses in this area, see P Rode, "Urban planning and transport policy integration: the role of governance hierarchies and networks in London and Berlin" (2019) 41 Journal of Urban Affairs 39.

[18] G Mattioli, "Where sustainable transport and social exclusion meet: households without cars and car dependence in Great Britain" (2014) 16 Journal of Environmental Policy and Planning 379.

[19] Goodwin and Curtis, supra, note 6, 441.

[20] See in this sense the Horizon 2020-funded project CIVITAS SUMP-PLUS <https://sump-plus.eu/about/project> (last accessed 20 February 2023).

[21] Goodwin and Curtis, supra, note 6, 441. See also C Mullen, "Governing a Risky Relationship Between Sustainability and Smart Mobility" in M Finck, M Lamping, V Moscon and H Richter (eds), Smart Urban Mobility – Law, Regulation, and Policy (Berlin, Springer 2020).

[22] Bulkeley, supra, note 7.

[23] See H Bulkeley, "Managing environmental and energy transitions in cities: state of the art and emerging perspectives" (OECD, 2019) <https://www.oecd.org/cfe/regionaldevelopment/Bulkeley-2019-Managing-Transition-Cities.pdf> (last accessed 20 February 2023); Bulkeley, supra, note 7. On the concepts of climate urbanisms and action and their implications, see, among others, J Long and JL Rice, "From sustainable urbanism to climate urbanism" (2019) 56 Urban Studies 992; V Castán Broto, E Robin and A While, Climate Urbanism: Towards a Critical Research Agenda (Berlin, Springer 2021).

change. Their aim is to reconfigure the systems through which energy, mobility and housing services are provided in urban areas.[24] This expansive scope implies that climate solutions are becoming more open-ended and transformative regarding the way we live in cities, involving also a broader set of actors and sites.[25]

Bulkeley identifies two central issues that may affect the governance of climate-connected responses. First, due to their cross-cutting nature, climate-connected responses depend on climate change being linked with other agendas and challenges and on how this linking process is sustained across the actors involved.[26] Second, as the terrain of climate actions has expanded to also cover areas beyond cities' responsibilities, multi-level coordination is essential to ensuring that climate-connected responses can work effectively.[27]

To focus on these challenges, we hereafter build on a reworked version of Candel and Biesbroek's framework[28] and identify three constituent dimensions of the policy integration process involved in climate-connected responses: namely, policy frames, substantive instruments and procedural coordination. With its emphasis on policy integration as a dynamic process for governing cross-cutting problems,[29] this framework appears particularly suitable for unpacking the governance challenges and complexities that affect the integration of climate change with other sustainability goals in the design of climate-connected measures.

First, policy frames clarify how a policy issue is perceived by the various actors involved and how their perspectives affect solutions.[30] By addressing a set of challenges usually considered separate, climate-related responses transform the nature, resources and means of solution and create a new dynamic of support and contestation. The focus on frames, therefore, provides a window onto the extent to which each of the key stakeholders recognises climate and other challenges as connected, what their understanding of this connection is and the extent to which they perceive a joint governance approach as necessary.[31]

Second, policy instruments, meant as the means policy actors use to achieve their goals, are important in studying policy integration processes.[32] The literature observes that climate policies are generally pursued through a policy mix[33] that, in addition to market measures and informational tools, features "hard" regulatory instruments and voluntary

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[24] Bulkeley, supra, note 7, 269–72.

[25] ibid, 9.

[26] ibid, 272.

[27] ibid, 12–15.

[28] JL Candel and R Biesbroek, "Toward a processual understanding of policy integration" (2016) 49 Policy Science 211.

[29] In this sense, among the many options, we will adopt the definition of policy integration as a "process that occurs at a meta-level and involves the use of specific instruments designed to integrate a set of considerations, issues, and stakeholders across different policy domains (see J Tosun and A Lang, "Policy integration: mapping the different concepts" (2017) 38 Policy Studies 555).

[30] R Lau and M Schlesinger, "Policy frames, metaphorical reasoning, and support for public policies" (2005) 26 Political Psychology 77.

[31] See in this regard M Hulme, *Why We Disagree about Climate Change: Understading Controversy, Inaction and Opportunities* (Cambridge, Cambridge University Press 2008).

[32] See recently P Trein, M Maggetti and I Meyer, "Necessary conditions for policy integration and administrative coordination reforms: an exploratory analysis" (2021) 28 Journal of European Public Policy 1410, 1413.

[33] For a broad classification of policy instruments in the climate field, see D Benson and A Jordan, "Climate policy instrument choices" in D Farber and M Peeters (eds), *Climate Change Law* (Cheltenham, Edward Elgar 2016). Among the many classifications and perspectives on the literature on policy instruments, see C Hood, *The Tools of Governments* (London, Macmillan 1983); LM Salamon, *The Tools of Government: A Guide to the New Governance* (Oxford, Oxford University Press 2002); P Lascoums and P Le Galés, "Understanding public policy through its instruments. From the nature of instruments to the sociology of public policy instrumentation" (2007) 20 Governance 1.

measures at higher levels,[34] as well as experimental approaches in cities.[35] In the array of challenges that climate-connected cities are to address, this set of instruments is combined with others outside climate policy, with the choices made also being influenced by the different levels and institutions involved. It is thus necessary to consider how the expanding set of instruments is evolving within existing constitutional constraints[36] and whether the overall design results in comprehensive and coherent incentives that support the goals of climate-connected cities.

Third, coordination focuses on the procedures and institutional arrangements established to reduce asymmetries and create a coherent set of actions among the stakeholders involved.[37] By covering an expanding mix of challenges, climate-connected actions shift the nature and resources of actors, while involving new ones from different areas. This may generate new actor coalitions, but it also brings considerable risk of disagreement and inconsistent measures.[38] Consequently, it is essential to understand whether and to what extent procedures and arrangements (formal and informal) allow the relevant actors to influence solutions and promote the alignment of interests and goals within the overarching strategy. An investigation of this must cover both the horizontal level of the city and its vertical connections, taking into account constitutional limitations and the distribution of competences.

Focusing on these three key dimensions, we will discuss hereafter how this process of policy integration unfolds in practice in the development of climate-connected actions that support the transition to sustainable urban mobility.

III. Methodology and case description

1. Approach and data selection

To study the challenges and complexities of the multi-objective governance of sustainable urban mobility in the context of rapid decarbonisation, we conducted a qualitative study focused on two Dutch cities: Maastricht and Rotterdam. Both cities are rooted in the same public administrative context, in which local authorities have an increasing degree of autonomy and collaborate effectively with other levels and recent events, as specified below, have forced the prioritisation of climate change in policymaking across all sectors and levels of government. At the same time, we chose cities with diverse geographic and socio-economic characteristics, as will be further explained in the next subsection, and that are representative of two different groups of EU cities.[39] Specifically, Maastricht is an example of a small to medium-sized city (120,000–200,000 inhabitants), which represents the most numerous group of EU cities. Rotterdam is a large city (>300,000 inhabitants), of which there are only ninety-three in the EU. Past studies indicate those in the first

[34] See C Adelle and D Russel, "Climate Policy Integration: A Case of Déja Vu?" (2013) Environmental Policy and Governance 1.

[35] See, among others, M Hoffmann, *Climate Governance at the Crossroads: Experimenting with a Global Response after Kyoto* (Oxford, Oxford University Press 2011); E Smeds and M Acuto, "Networking cities after Paris: weighing the ambition of urban climate change experimentation" (2018) 9 Global Policy 549.

[36] K Richards and J van Zeben, "Introduction to Volume VIII: instruments for environmental policy" in K Richards and J van Zeben (eds), *Policy Instruments in Environmental Law* (Cheltenham, Edward Elgar 2020).

[37] G Bouckaert, B Peters and K Verhoest, *The Coordination of Public Sector Organizations: Shifting Patterns of Public Management* (London, Palgrave Macmillan 2010).

[38] See Hulme, supra, note 31.

[39] L Dijkstra and H Poelman, "Cities in Europe. The New OECD-EC Definition" <https://land.copernicus.eu/user-corner/technical-library/oecd-definition-of-functional-urban-area-fua> (last accessed 20 february 2023).

category struggle more with mobility policies due to their relatively limited capacities and resources than those in the second.[40]

The data were derived from qualitative interviews combined with publicly available policy documents. We conducted twenty-eight semi-structured interviews lasting 1.0–1.5 hours each. Interviewees consisted of nine experts from the local level, six from national government, seven from the EU institutions and six who worked for non-governmental organisations (NGOs) and city networks (see Appendix A for a list of respondents and Appendix B for the interview guide in the Supplementary Material). The interviews were conducted in 2020–2021. Due to the restrictions imposed by the COVID-19 pandemic, they were conducted via Zoom, with each being recorded, transcribed and analysed, together with the publicly available policy documents. The documents were found on the websites of the institutions involved or shared with us during the interviews. Both the interview questions and the document analysis were conducted to better understand how policy approaches towards sustainable mobility have changed in the context of the need for decarbonisation. The analysis in this article relies significantly on the interviews with centrally placed administrators who worked to develop and implement mobility strategies at the local and national level. The interviews with the stakeholders (in NGOs and city networks) and EU administrators enabled us to appreciate the administrative narrative from different angles and to locate the case studies within a broader perspective. Finally, the documents were used to analyse the goals and means of the mobility strategies, as well as to shed light on the discourses that framed their development.

2. Case description

The Netherlands is a unitary decentralised state. Dutch municipalities enjoy an increasingly extensive degree of autonomy and maintain collaborative relationships with other government levels.[41] As far as urban mobility is concerned, they guide policymaking mainly through local traffic plans, taxation (eg levying parking fees) and regulatory instruments (eg limited-emissions zones (LEZs)). In line with the Dutch culture of integrated planning, mobility has long been coordinated with other functions, particularly land-use planning.[42] At higher levels, Dutch provinces organise public transport services, which are tendered out to private operators. Then, the central government, besides defining the legal framework for the powers exercised at lower levels, exerts influence in connection with transport planning and financing, the environment, housing and spatial development, the economy and taxation. The EU has also influenced urban mobility mainly through the exercise of two types of shared competencies with the Member States.[43] First, in transport policy, the EU has intervened through programmes

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[40] A Dragutescu, P Jones, E Smeds, M Horvat and E Meskovic, "City Typology, for Context-Sensitive Framework and Tools Development" (Report on H2020 CIVITAS SUMP-PLUS project, 2020); M Ryghaug and TM Skjølsvold, "Transforming society through pilot and demonstration projects" in M Ryghaug and TM Skjølsvold (eds), *Pilot Society and the Energy Transition. The Co-Shaping of Innovation, Participation and Politics* (Berlin, Springer 2021).

[41] See, among others, M Groenleer and F Hendriks, "Subnational mobilization and the reconfiguration of central-local relations in the shadow of Europe: the case of the Dutch decentralized unitary state" (2020) 30 Regional and Federal Studies 195.

[42] See, for instance, M van Geet, S Lenferink, T Bussche and J Arts, "Finding the right tools for the job: instrument mixes for land use and transport integration in the Netherlands" (2021) 14 Journal of Transport and Land Use 125, 131.

[43] S Dühr, C Colomb and V Nadin, *European Spatial Planning and Territorial Cooperation* (Abingdon, Routledge 2010) p 270. For a legal analysis of the distribution of competences with an influence on urban mobility, see also J van Zeben, "Environmental implications of the EU's urban mobility agenda" in M Finck, M Lamping, V Moscon and H Richter (eds), *Smart Urban Mobility – Law, Regulation, and Policy* (Berlin, Springer 2020) pp 42–43.

(eg Trans-European Transport Network, or TEN-T)[44], networking (eg Eltis)[45] and guidelines (eg on sustainable urban mobility plans).[46] Second, the EU has also intervened from adjacent areas, including the internal market (eg setting vehicle emissions standards),[47] regional and cohesion policy (eg by infrastructure investments) and the environment (eg setting air quality standards).[48]

Within this relatively cooperative system, the Netherlands has gained a position in the vanguard of the EU in tackling mobility problems, despite leaving some issues unresolved. For example, slower means of mobility (eg cycling) are well developed in the country, and air quality has improved in line with EU Directive 2008/50/EC.[49] However, transport-related GHG emissions have increased over the past twenty years,[50] traffic congestion remains an issue[51] and progress has lagged regarding the EU "Vision Zero" target for road fatalities.[52]

Lately, key national climate judgments have been handed down with major consequences for policymaking, including in the field of mobility. In the *Urgenda* case,[53] the Dutch Supreme Court held the state responsible for violating its GHG emissions reduction obligations under the European Court of Human Rights (ECHR) and international climate treaties and ordered the limiting of GHG emissions to 25% below 1990 levels by 2020. In another case, the Dutch Council of State declared the national integrated approach to nitrogen insufficient to comply with the EU Habitats Directive,[54] which limits excess deposition of nitrogen in protected areas (as this can have detrimental effects on biodiversity and air quality).[55] As a result, a new climate law was enacted, imposing

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[44] Regulation (EU) 1315/2013 on Union guidelines for the development of the trans-European transport network (2013) OJ L 348.

[45] The European Local Transport Information Service (ELTIS) is a non-profit portal for local transport news and events, transport measures, policies and practices implemented in cities and regions in Europe. Its activities are financed by the European Commission's Directorate General for Mobility and Transport (DG MOVE).

[46] Annex "A Concept for Sustainable Urban Mobility Plans" to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Together towards competitive and resource-efficient urban mobility, SWD(2013) 524–29 final.

[47] Regulation (EU) 2019/631 of the EU Parliament and of the Council setting CO_2 emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011 (2019) OJ L 111 25 April 2019.

[48] Directive 2008/50/EC on ambient air quality and cleaner air for Europe (2008) OJ L 152.

[49] See the most recent assessment by the EU Environmental Agency at European Environmental Agency, Netherlands – Air pollution country fact sheet <https://www.eea.europa.eu/themes/air/country-fact-sheets/2021-country-fact-sheets/netherlands> (last accessed 20 February 2023).

[50] See PBL/CPB, *Notitie ten behoeve van de werkgroep Toekomstbestendige mobiliteit van de Brede maatschappelijke heroverwegingen 2020* (*Memorandum for the working group on future-proof mobility of the Broad Social Reconsiderations 2020*) (14 April 2020) p 35.

[51] See Recommendation for a Council Recommendation on the 2019 National Reform Programme of the Netherlands and delivering a Council opinion on the 2019 Stability Programme of the Netherlands, COM(2019) 519 final.

[52] European Transport Safety Council, *Ranking EU Progress On Road Safety 15th Road Safety Performance Index Report* (June 2021) <https://etsc.eu/wp-content/uploads/15-PIN-annual-report-FINAL.pdf> (last accessed 20 February 2023).

[53] *Stichting Urgenda* v. *Government of the Netherlands* (2019) ECLI:NL:HR:2019:2006 Rechtbank Den Haag, C/09/456689/HA ZA 13-1396. Among the many analyses of the judgment, see J van Zeben, "Establishing a Governmental Duty of Care for Climate Change Mitigation: Will *Urgenda* Turn the Tide?" (2015) 4 Transnational Environmental Law 339; J Verschuuren, "The State of the Netherlands v Urgenda Foundation: The Hague Court of Appeal upholds judgment requiring the Netherlands to further reduce its greenhouse gas emissions" (2019) 28 RECIEL: Review of European, Comparative & International Environmental Law 94.

[54] Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (1992) OJ L 206.

[55] *Stichting Werkgroep Behoud de Peel* v. *Het college van gedeputeerde staten van Noord-Brabant,* ECLI:NL:RVS:2019:1603 Raad van State The Hague, 201600614/3/R2.

ambitious climate goals in all policy areas,[56] and the national government formulated detailed plans to comply with both rulings.[57]

Within the Netherlands, the current study focused on the cities of Rotterdam and Maastricht. Rotterdam is the Netherlands' second largest city, with a growing population of 651,631 in 2021.[58] As the capital of the province of South Holland, Rotterdam hosts the largest port in the EU and is part of the Randstad, one of the most urbanised and best-connected areas in the EU. Rebuilt after the Second World War, the city enjoys a modern and spacious road network and, partly due to its diverse population and lower income levels, it has the highest concentration of cars and the lowest use of alternative transportation among the large Dutch cities.[59] Yet, particularly through the efforts of its long-time mayor, Ahmed Aboutaleb, the city has become a forerunner in climate policies and has taken a leading role in the field at the EU and international level. Maastricht is a medium-sized city, with a slightly declining population numbering 120,227 in 2021.[60] As the capital of the southernmost Dutch province of Limburg, it is relatively isolated from the rest of the country and is near the Belgian and German borders. Besides being bisected by the Maas River, its historic centre retains narrow cobbled streets and remnants of ancient fortifications, which attract some three million tourists every year. Because of its limited space and hilly configuration, Maastricht has been a pioneer in underground car parking, and mobility in the city is largely oriented towards cars and pedestrians.[61]

IV. The challenges of integrating climate change in sustainable urban mobility policies in the EU: the cases of Rotterdam and Maastricht

1. Policy frames of sustainable urban mobility in the context of decarbonisation: from modal shift to technological fixes

When asked about their understanding of sustainable urban mobility, interviewees at all levels agreed that climate change had recently become the central policy goal in the field. This shift was evident in both of the Dutch cities investigated. A mobility policymaker in Maastricht said that while the major goal had been to reduce congestion and, secondly, air pollution, "in the last ten years climate change has changed the way we think [about urban mobility]". An interviewee in Rotterdam had similar observations, adding that "[after] the climate conference in Paris, our mayor … came back with a mission … to reduce CO_2

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[56] For the Netherlands, see Klimaatwet (Climate Act) (2019) BWBR0042394. For the EU, see the Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ("European Climate Law") (2021) OJ L 243. For an overview of climate governance in the Netherlands, see G van der Veen and K de Graaf, "Climate Litigation, Climate Act and Climate Agreement in the Netherlands" in M Roggenkamp and C Banet (eds), *European Energy Law Report* (Cambridge, Intersentia 2020). For an overview of the EU level, see E Chiti, "Managing the ecological transition of the EU: the European Green Deal as a regulatory process" (2022) 59 Common Market Law Review 19.

[57] See the National Climate Agreement with commitments from all stakeholders to reduce the climate emissions, National Climate Agreement (28 June 2019) <https://www.klimaatakkoord.nl/documenten/publicaties/2019/06/28/national-climate-agreement-the-netherlands> (last accessed 20 February 2023). On nitrogen, the Parliament passed a law to reduce nitrogen emissions Wet van 10 maart 2021 tot wijziging van de Wet natuurbescherming en de Omgevingswet (stikstofreductie en natuurverbetering).

[58] CBS, 2021. Population Development in Maastricht <https://opendata.cbs.nl/#/CBS/en/dataset/37259eng/table?ts=1671460605253> (last accessed 20 February 2023).

[59] D Loorbach, T Schwanen, B Doody and P Arnfalk, "Transition governance for just, sustainable urban mobility: an experimental approach from Rotterdam, the Netherlands" (2021) 1 Journal of Urban Mobility 5.

[60] CBS, 2021. Population Development in Maastricht <https://opendata.cbs.nl/#/CBS/en/dataset/37259eng/table?ts=1671460605253> (last accessed 20 February 2023).

[61] J Stanković, M Dijk and A Hommels, "Upscaling, Obduracy, and Underground Parking in Maastricht (1965–Present): Is There a Way Out?" (2021) 47 Journal of Urban History 1225.

emissions by 49% by 2030 across the board". This resonated well with the EU level, where the European Green Deal presents both mobility and cities as urgent issues due to their high contributions to emissions.[62] At the national level, too, a mobility expert observed that "the whole climate issue has ... moved towards a broader look at what the main mobility problem is, because [this] used to be congestion". In the words of an NGO activist, "The Paris Agreement is ... the first real sign that ... we all have to make a turn."

Yet, this shared frame masks key differences. The climate objective of mobility can be articulated either as use of technology fixes to decarbonise existing modes of mobility or as reductions in GHG emissions achieved by a shift to slower, more active mobility modes. One administrator expressed this distinction as follows: "You can define it very narrowly, and then it's [about] the energy transition and fuel policy. You can make it wider, then it's about a modal shift and change to healthier types of transport."

Both cities appear to mainly support the second articulation. In the environmental vision of Maastricht,[63] in which the city defines its integrated spatial development strategy, climate is combined with other goals (creating an attractive living environment and economic agglomeration) in support of measures that favour pedestrians and cyclists over other modes. With "all these goals, we are aiming in the same direction: less cars, more bicyclists", said a local mobility expert. In Rotterdam, climate targets have been used to reinforce modal shift measures set out in an earlier local traffic plan,[64] aimed at reducing pollution and achieving a healthier, more attractive city. Both objectives are now underpinned in an innovative approach, called *trias mobilica*, which guides policymaking by prioritising sustainable mobility measures over others whenever possible.[65] "We're combining the two because [the climate priority] isn't conflicting, but rather helpful", explained a local mobility expert. "The big change is that we approach mobility ... as a way of improving life in the city ... It's not car-based anymore." Integrating climate with other goals of urban mobility also appears necessary to gain support from local politicians. This was explained by a mobility expert in the Rotterdam–The Hague Metropolitan area (MRDH), a regional collaboration active in the field:

> When we started in 2016, [our policy] was mainly focused on CO_2 reduction, and for our aldermen it was quite difficult to get motivated. ... When we broaden[ed] the perspective with urbanisation, safety and accessibility, they were more eager to do something, because they could achieve more goals with one task.

At the national and EU levels, the first framing seems to prevail. In the Netherlands, the National Climate Agreement compiles with stakeholders' commitments to meet climate targets. However, as one national policymaker clarified, "a large part ... is on electrification of vehicles, so not changing the system but changing the vehicles ... a

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[62] Commission Communication "The European Green Deal" (2019) COM/2019/640 final.

[63] Municipality of Maastricht, "Omgevingsvisie 2040 (Environmental Vision 2040)" <https://www.maastrichtbeleid.nl/beleidsinformatie/Raadsvoorstel/2020/Raadsvoorstel%2012-2020%20-%20Omgevingsvisie%20Maastricht%202040/Raadsvoorstel%2012%20-%20Bijlage%202%20%20-%20Omgevingsvisie%20Maastricht%202040%20-%20deel%201%20def.pdf> (last accessed 20 February 2023).

[64] Municipality of Rotterdam, "Smart accessibility for a healthy, economically strong and attractive Rotterdam – Rotterdam Urban Traffic Plan 2017–2030+" (2017) <http://tda-mobility.org/wp-content/uploads/2018/11/Rotterdam_Urban-Traffic_Plan.pdf> (last accessed 20 February 2023).

[65] Rotterdam Municipality, *Aanpak Nul Emissie Mobiliteit Naar uitstootvrije stedelijke mobiliteit (Approach Zero Emission Mobility. Towards zero-emission urban mobility)* (2019) <https://rotterdam.groenlinks.nl/sites/groenlinks/files/downloads/newsarticle/1719_9023_Aanpak%20Nul%20Emissie%20Mobiliteit_A4_staand__19bb022135.pdf> (last accessed 20 February 2023).

technological fix". Similarly, in a new strategy translating the goals of the European Green Deal for the field of mobility,[66] the European Commission sets out solutions aimed primarily at cutting GHG emissions (eg greening transport, zero-emissions delivery, effective charging infrastructure and carbon pricing), with digitisation and innovation as key drivers. A mobility expert in a city network in Brussels explained that, at higher levels, "the complexity of the urban mobility system … is simplified into much more concrete technological fixes". The EU and national institutions have seemed open to adopting a similar frame to cities when addressing mobility at the local scale, but such instances are as yet limited. Two illustrative examples are the latest EU Urban Mobility Framework,[67] in which the European Commission introduces requirements to help cities stimulate active mobility, and the Vienna Declaration,[68] in which the transport ministries of EU countries develop recommendations to improve cycling, public transport and shared mobility.

2. Policy instruments for sustainable urban mobility and the influence of climate change

Climate change becoming the main goal to be integrated with other sustainability issues has transformed the instrument mix shaping urban mobility policies. A first noteworthy development is regulatory instruments that have added or tightened emissions limits. Following the Paris Agreement, both the EU and the Netherlands adopted new climate laws[69] imposing on all policy sectors an obligation to reduce GHG emissions, with progress subject to evaluation by independent bodies.[70] By reinforcing the urgency of achieving the binding climate targets, these regulatory instruments have influenced the adoption of sustainable mobility policies, not only by those in the mobility field, but also by those working in sectors that can affect mobility. According to an expert in Maastricht, "Climate is a big incentive. … Our energy and mobility policy advisors work together on a strategy to … reduce our carbon footprint and make sure that people move more around the city." In Rotterdam, a sustainability officer described a similar effect: "I think the Paris Agreement … helped us to be more effective … a stick always helps. … We thought, 'Well, let's work it out for Rotterdam!' … It's top-down." Even stronger is the influence of the EU Habitats Directive. Its nitrogen emissions limits gained new urgency with the previously mentioned judgment that forced the Dutch state to develop plans to immediately comply.[71] Although impacting mainly new construction projects and to a lesser extent vehicle emissions, this regulatory instrument strengthened the strategic coalition between mobility and housing experts. A national administrator in the

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[66] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Sustainable and Smart Mobility Strategy – Putting European Transport on Track for the Future, COM(2020) 789 final, para 9.

[67] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: The New EU Urban Mobility Framework, COM(2021) 811 final, paras 38–45.

[68] UN Economic Commission for Europe, *Report of the High-level Meeting on Transport, Health and Environment and of the Special Session of the Steering Committee of the Transport, Health and Environment Pan-European Programme* (ECE/AC.21/2021/2−EUCHP2018924/4.3.2, 2021).

[69] For the EU, see Regulation (EU) 2021/1119 establishing the framework for achieving climate neutrality (2021) OJ L 243. For the Netherlands, see Klimaatwet, supra, note 56.

[70] The European Scientific Advisory Board on Climate Change is in charge of providing independent scientific advice on EU measures, climate targets and their coherence with the European Climate Law and the Paris Agreement. In the Netherlands, the Climate Act distributes the task to monitor the development of GHG emissions to various institutions (PBL Netherlands Environmental Assessment Agency, TNO Energy Transition, Statistics Netherlands (CBS), the Netherlands Enterprise Agency (RVO.nl) and the National Institute for Public Health and the Environment (RIVM)) to produce the Netherlands Climate and Energy Outlook 2021 (KEV) yearly.

[71] Supra, note 55.

Rotterdam region explained, "We have to build a lot of houses [and] ... if you don't have public transport [and reduce] the cars ... the environmental impact assessment is negative. You can't build. ... So it's connected to each other." In Maastricht, however, these same regulatory limits constituted much less of a constraint. A local policymaker explained, "Maastricht is already built up ... [so] for construction ... we have to calculate what we are polluting. ... It's all an [accountancy exercise]."

The effects of the EU Air Quality Directive are instead limited today. Initially, in the early 2010s, this legislation triggered a chain of groundbreaking actions, including the creation of local LEZs and national measures to promote "clean" vehicles and improve traffic flows and public transport.[72] However, after these early successes, the momentum was lost.[73] Due to the overall weak limits imposed by the Directive, it seems to play little role in fostering sustainable mobility at present, and both Maastricht and Rotterdam have discontinued most of the measures they set up to secure their compliance with the Directive in the past. In this regard, a national mobility expert admitted that these "EU rules are not strict enough to make a real difference in the Netherlands".

A second development is the advent of policy instruments to create greater coordination around the climate goal. Some of these serve to promote climate actions across various actors. For instance, continuing a Dutch tradition in climate policy,[74] the national government recently adopted a climate agreement in the field of urban mobility with commitments from nearly 100 partners, including public authorities, businesses and societal organisations.[75] The agreement covers a large set of measures, from promoting electromobility and alternative fuels to turning LEZs into zero-emissions zones for deliveries. Some forty major Dutch cities have agreed to adopt these by 2025. Using the example of zero-emissions zones for deliveries, a mobility expert from Maastricht highlighted the instrument's coordinative effect: "First, there is a committed logistic sector involved. ... Secondly ... you have time [to] inform ... have pilots and try to change your fleet ... [Thirdly, there is] a clear implementation path for all cities. ... They know ... we're doing the same thing." Both Rotterdam and Maastricht have followed up with similar local agreements,[76] although Rotterdam's involves more actors and fields.

Other instruments have been developed to coordinate interventions and address common challenges across different policy areas. A particularly important one in the Netherlands is the strategies on spatial planning and the environment that national and local institutions were mandated to adopt pursuant to the 2016 Environment and Planning

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[72] Directive 2008/50/EC (supra, note 48) triggered several reactions in the Netherlands. Since in 2009 a number of Dutch cities did not meet the EU daily average standard for particulate matter with a diameter of ten microns or less (PM10) and Nitrogen dioxide (NO$_2$), the country received from the European Commission an exemption to the application of the Directive and developed a national plan to improve air quality, with actions primarily aimed at "cleaning vehicles", promoting traffic flow (thereby preventing jams) and promoting public transport. For a comparison with other countries, see European Court of Auditors, *Air Pollution: Our Health Still Insufficiently Protected* (Special report no 23/2018).

[73] For failed judicial attempts in this sense, see J Krommendijk, "Beyond *Urgenda*: The role of the ECHR and judgments of the ECtHR in Dutch environmental and climate litigation" (2022) 31 RECIEL: Review of European, Comparative & International Environmental Law 60.

[74] R Wurzel, A Zito and A Jordan, "Governing by voluntary means" in R Wurzel, A Zito and A Jordan (eds), *Environmental Governance in Europe. A Comparative Analysis of New Environmental Policy Instruments* (Cheltenham, Edward Elgar 2013).

[75] Supra, note 58.

[76] See Energieswitch Rotterdam Climate Alliance, "Rotterdam Climate Agreement" <https://cdn.locomotive.works/sites/5ab410c8a2f42204838f797e/content_entry5ab410faa2f42204838f7990/5be174d6337f770010c1b69f/files/1.2.2_Rotterdam_Climate_Agreement_ENG.pdf?1601637912> and "Maastrichts Energie Akkoord" (Maastricht Energy Agreement) <https://www.maastrichtbeleid.nl/beleidsinformatie/Raadsronde/2017/91-2017)%20Programmabegroting%202018/91-2017%20-%20Programmabegroting%202018%20-%20Bijlage%20-%20Klimaatbegroting%202018> (both last accessed 20 February 2023).

Act (in Dutch, these strategies go by the names *Nationale Omgevingsvisie* (NOVI)[77] for the national level and *Gemeentelijke Omgevingsvisie* (GOVI) for the municipal level).[78] The policymaker in charge of the NOVI explained how this instrument, which aims to solve the problems of the five major regions around two main goals ("sustainable development . . . so no more pollution [and being] CO_2 neutral . . . [and] quality of the environment"), is changing their policymaking approach: "At the national level there are at least eight departments, and we try to make integrative policies. . . . In spatial planning, it has been done for decades, but in other policy fields it's relatively new." Yet, this integrative effort have had limited results at national level, according to this interviewee: "There are no specific goals . . . This is a very general policy frame . . . because we think . . . most of the work should be done by local government." At the local level, instead, Rotterdam and Maastricht used this same cross-cutting instrument (the GOVI) to define concrete trade-offs between different forms of mobility and competing ways of using urban space. As a result, the strategies of both cities today contain measures to promote modal shifts instead of privileging car mobility. The manager of the Maastricht GOVI explained how the instrument had helped with achieving this goal: "With this vision for the first time [we] explicitly mention streets or areas where we want to reduce car mobility, and make it more attractive for people to reach it by foot or by bike . . . [and] we've really made a change in . . . connections to the rest of the world where we've chosen for railways, public transport and not car use." This opinion was shared by another local policymaker, who considered the instrument "the most important one we have. . . . It's top down and . . . gives you the right frame and the right policy levers. . . . That's a good way we are working together."

A third development is the emergence of governance experiments. These are being used at all levels to test and implement future-proof climate solutions in the field of mobility. Under the European Green Deal, the European Commission is directly supporting 100 cities in testing innovative solutions for climate-neutral and smart cities.[79] Similarly, Rotterdam is experimenting with restricting roads from two lanes to one in order to determine whether people will start to bike or walk instead of drive, and the city is collecting data on cyclists and pedestrians for the first time. Yet reducing car mobility remains a locally contested issue. Even in the form of experiments, one local administrator explained, "It's politically very difficult. . . . [I]t means a very long-term vision needs to be there."

Not all policy instruments, however, were found to promote the integration of climate change goals and the other sustainability goals needed to support transformative change. In this regard, two challenges emerged. The first relates to instruments that fail to integrate any sustainability considerations, including climate change, in mobility solutions. An example was in national funding, especially the infrastructure fund managed by the Ministry of Infrastructure and Water Management,[80] on which Dutch cities depend due to their own limited resources. Because this fund is legally earmarked for solving capacity issues caused by congestion (ie "bottlenecks"), as identified by the

[77] See in this sense Ministry of the Interior and Kingdom Relations, Nationale Omgevingsvisie (National Strategy on Spatial Planning and the Environment) (2020) <https://novistukken.nl/english/default.aspx> (last accessed 20 February 2023).

[78] Art 3.3, Wet houdende regels over het beschermen en benutten van de fysieke leefomgeving - Omgevingswet (Environmental and Planning Act), Staatsblad 2016, 156.

[79] The Climate-Neutral and Smart Cities mission represents one of the five Horizon Europe research and innovation programmes for the years 2021–2027 (see Art 8 Regulation (EU) 2021/695 establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination (2021) OJ L 170). Based on this programme, 100 EU cities are selected to develop and scale up initiatives to achieve climate neutrality. In addition, the programme provides funding, technical assistance and knowledge to cities to spur local innovations.

[80] See Wet Infrastructuurfonds (Infrastructure Fund Act) 1993 BWBR0006001.

National Market and Capacity Analysis (NMCA), and the budget can only be spent on infrastructure (primarily roads), local authorities are led to build or expand car infrastructure, although this is prone to generating induced demand, resulting in more congestion. This effect was observed in Rotterdam: "We want a third … multimodal bridge … but right now, the funding is for cars … so we have to be very careful not to call it a bridge for public transportation, because then we get in conflict with national government." A national policymaker noted, "Every problem is redefined [in terms of] an infrastructure solution, because that's what you get money for." Similar effects have been found in projects co-funded by the EU,[81] as exemplified by a tunnel project to redirect a highway that had once cut through Maastricht. The construction was funded through the TEN-T programme. According to a local administrator, after the tunnel opened "the quality of the highway got much better, [but] the train system hadn't changed". This led many people to revert to using cars, bringing the congestion level back up. This picture is broadly shared, as a city network representative at the EU level confirmed: "You cannot improve the connectivity across the EU if you don't recognise … the quality of life in urban areas. They might improve international transport flows, but they could worsen local congestion."

The second challenge is that some policy instruments do not give due consideration to broader sustainability concerns beyond climate emissions. A clear example is fiscal instruments on transport. Since the mid-2000s, the Dutch Ministry of Economic Affairs and Climate Policy has based motor vehicle taxes in part on CO_2 emissions, offering rebates for less polluting vehicles. The aim was to lower per-vehicle pollution. Yet, because of high incentives to company cars also being in place, this reform has hardly reduced car traffic in cities. Every attempt to introduce a system of taxation that reduces car use (eg road pricing) has instead met with a lack of political support. A national mobility policy explained:

> We've studied it for twenty years, but never introduced it. Now there's a study from the climate agreement by the Department of Finance … I wonder if the next government will want to do something … that is really sustainable. I don't think [sustainability] is the primary aim, the aim is economic growth.

At the same time, the national legal framework on local mobility taxes, such as parking fees, leaves cities with little room for manoeuvre. A mobility expert in Rotterdam explained this constraint: "We can put taxes on parked vehicles, but not on driving vehicles … [and] parking taxation can't solve everything. For example, the Uber taxis just drive around and never park … [but] on a national level … it's very sensitive. … It's really an instrument we would like to have, but we can't." A similar issue has arisen in regard to national programmes to support mobility measures. For example, to sustain the CO_2 emissions reductions achieved during the COVID-19 lockdowns, the Dutch Ministry of Infrastructure launched the "Spread and Avoid" campaign (*Spreiden en Mijden*).[82] The idea is to support regional initiatives that distribute car traffic more evenly over the day. This solution, however, conflicts with Rotterdam's *trias mobilica* strategy, which instead promotes public transport and active mobility as the foremost modes of mobility. "The frame … that the national government sets can complicate execution in the local context", one administrator admitted.

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[81] For similar issues emerging from TEN-T, see Commission Staff Working Document "Evaluation of the Regulation (EU) N° 1315/2013 on Union Guidelines for the development of a TransEuropean transport network" SWD(2021) 118 final, 45–46.

[82] See the website of the initiative <https://zowerkthet.nl/spreiden-en-mijden-van-werkmobiliteit/> (last accessed 20 February 2023).

3. Coordinating sustainable urban mobility policies around the climate priority

Organisational transformations, too, have been implemented to bolster support for climate across the board and to integrate climate and sustainability objectives into other mobility goals. Both Rotterdam and Maastricht have been developing processes and structures to negotiate a local vision of spatial planning and the environment. The process of developing the Maastricht GOVI now involves all actors, according to its manager, including "policy advisors on different topics ... the city council [including both] the coalition and opposition ... a lot of companies ... developers that want to build ... [and] local residents". This broad set of actors has required the manager to "work on a proposal that meets the most demands, and ... contributes to a more sustainable urban development", something that he admitted is "not always straightforward [but is] time and place dependent". To guide the process, the city has introduced the STOP principle (stop, think, observe, plan). This has, according to the manager, helped to "make the conflicts in terms of mobility goals more explicit [and] make specific choices on what kind of modality we want to prioritise". Similar integrative dynamics have emerged in Rotterdam. Unlike Maastricht, where departments are still organised around municipal topics, Rotterdam has created a sustainability department responsible for emissions reduction policies across the board. This works as a counterpart to all city departments, including mobility. "The idea is that all people ... have to embrace the sustainability goals [and] you cannot reach that by a programme, because [it's] not part of land-use planning, [which is] the primary process of the city", said a civil servant in the department. The new organisational structure allowed for "regular meetings with all departments ... to talk about how they implement sustainability in the primary process. We call it sustainability by design."

Despite their ambitions, these processes and structures have not always succeeded in promoting sustainable urban mobility. In Maastricht, a mobility expert's proposal to close one of the city's many underground parking facilities was vehemently rejected by the city's economic development department. "This parking garage is deadly important to the economic values of the city", it stated. As a result, instead of making arrangements to reduce downtown parking, the environmental vision now commits to building new park-and-ride areas on the outskirts of the city. Similarly, in the redevelopment of a former industrial area, the city allowed three parking spaces to be created per apartment. As one regional policymaker recounted, "They came with the argument that ... to combat population decline, they want to be car-friendly, which is a bit frustrating" for those working on sustainable mobility. In Rotterdam, the city council similarly rejected a proposal from the Netherlands Organisation for Applied Scientific Research (TNO) to establish a zero-emissions zone to meet the binding GHG reduction targets by 2030.[83] A sustainability expert recounted, "I gave a presentation to all the city councillors, [but] they didn't want to hear it. They said, 'Make it nice for people, think of something bottom-up.' ... [Y]ou need strong political will and agreement to really limit car use."

Another type of organisational transformation involves the creation of regional collaborations on mobility. The central government enabled Rotterdam, along with Amsterdam, to set up a regional body – the MRDH[84] – with funding to independently deal with tasks in a variety of areas, including the economy, spatial planning, sustainable mobility and the organisation of public transport.[85] Within the MRDH, mobility councillors

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[83] See Netherlands Organization for Applied Scientific Research, *CO₂-reductieopgave voor mobiliteit Rotterdam* (*CO₂ reduction targets for mobility Rotterdam*) (2018).

[84] See the National Climate Agreement, supra, note 57, p 49.

[85] The central government has transferred the tasks in the area of transport to the MRDH through the *Besluit van 17 december 2014 tot wijziging van het Besluit personenvervoer 2000 en van enkele andere besluiten in verband met de Wet afschaffing plusregio's* (Ministerie van Infrastructuur en Milieu, Staatsblad 2014/559 AMvB, 17 December 2014).

from twenty-three municipalities developed a regional mobility strategy focused on the rail line running through the main cities. A Rotterdam mobility expert observed that having this type of organisation with its own tasks and funding had enabled constraints of the national infrastructure fund to be bypassed: "[Before] when we ha[d] an issue, we need[ed] to express it [as] car congestion to talk to the national government. [Now with the] collective map ... it's accepted that housing, infrastructure and urban quality are all intertwined, [and we] get the money to get it done." In Maastricht, the only such innovation has been the reorientation of an existing cooperation, *Maastricht Bereikbaar*, which developed small-scale projects with local companies to solve accessibility problems through a regional network, *Zuid-Limburg Bereikbaar*, which put more emphasis on decarbonising mobility. The change was undertaken by the national government to support its climate goals. However, it led to the creation of an organisation with limited tasks and funding renewed on an annual basis. A mobility manager reflected on the effects of the change: "This is not good for continuity of the measures and ... strategic planning, because ... you're focused on the short-term." The constraints of not having a regional authority on mobility, which had emerged in other Dutch cities as well,[86] have forced Maastricht to take the lead in developing a regional mobility strategy, but with little success. As one local planning expert said, "[We are] just a bunch of people ... that exchange knowledge. ... There's no ... overarching organisation that has the means and capacity to work on a long-term regional mobility strategy."

Equally important are vertical coordination procedures that connect cities with higher-level institutions involved in mobility. A number of Dutch cities have traditionally held consultations with national-level counterparts, particularly in the Ministry of Infrastructure and Water Management. A Maastricht policymaker characterised the relationship with the national level as cooperative but also strategic: "In our vision [we try] to make a story that connects to the goals and all kinds of project initiatives on a national and EU level. ... In the past, we were able to work on very big infrastructure projects, which required collaboration on the EU and national levels." This was echoed by a colleague in the mobility department: "I see these [higher-level institutions] as a project partner ... but it's maybe [like] playing chess because you have to have a strategy on projects, on modes." A similar narrative emerged in Rotterdam, but the fact that the city is part of a polycentric region with a separate regional organisation added a layer of complexity:

> When it comes to negotiating with national government, and there is a lack of money and choices need to be made, it's getting difficult because you get competition between Rotterdam, The Hague and the regional authority itself. ... We've now chosen the core [rail] line [as] a good collective story, but there are some different viewpoints on the priority of the investments in different parts of the line.

From the national perspective, vertical interaction with cities has aimed at cooperation, and the new cross-cutting climate and sustainability priorities have expanded it beyond the field of mobility. "In the national strategy, we work together with the seven or eight biggest city regions to develop strategies on mobility, living and the economy. ... We set broad goals, and ... when they don't reach our goals, we ... correct it [through] money [and] cooperation", one policymaker said. However, a mobility expert from the Ministry of

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[86] T Verkade, "Provincies die mobiliteit willen bevorderen moeten eerst voor files zorgen. Anders geeft het Rijk geen geld" ("Provinces that want to promote mobility must first take care of congestion. Otherwise, the state will not give money") (*De Correspondent*, October 2020) <https://decorrespondent.nl/11580/provincies-die-mobiliteit-willen-bevorderen-moeten-eerst-voor-files-zorgen-anders-geeft-het-rijk-geen-geld/385151390580-ad565c76> (last accessed 20 February 2023).

Infrastructure and Water Management also acknowledged differences in dealing with cities: "Rotterdam, The Hague, Utrecht, they are organised, they have different experts . . . Amsterdam has thoughts about Amsterdam 2040, maybe 2050 . . . and talking to them [is easier]. . . . Cities like Maastricht . . . that's more difficult. . . . The smaller cities are mostly represented to us via the provinces." The EU level is also increasingly important as an actor promoting sustainable mobility. With climate change becoming the central focus of mobility policy, the number of EU directorates-general (DGs) potentially involved in the field of urban mobility has increased. In the words of one EU administrator, while "in the past we had climate . . . policy on its own, [now] this is really going through every area". At the same time, due to their prominent role in climate policy implementation, cities are receiving greater consideration by the EU institutions, even beyond strict constitutional limits. Illustrative examples are the "EU Mission: Climate-Neutral and Smart Cities" and the new "EU Urban Initiative", in which cities are expected to play a greater role in funding management than is usually recognised.[87] An EU expert described the change as follows: "With the European Green Deal and what is happening with the climate . . . there is a growing understanding that we should go beyond the narrow interpretation of the subsidiarity principle [and] be more active . . . at the city level."

Despite the increased vertical coordination around climate being a common priority in sustainable mobility, challenges persist. A first challenge regards higher-level processes and organisations that still do not take sustainability and climate concerns into account. A clear example, again, is found at the national level and involves the Ministry of Infrastructure and Water Management, particularly its aforementioned infrastructure fund. In principle, resources from the fund are assigned via a decision-making process – the so-called Multiyear Programme for Infrastructure, Land Use Planning and Transportation (MIRT)[88] – which allows all stakeholders to contribute towards solving mobility issues. However, in addition to the funding rules and assessment processes already discussed, the ministry's internal structure has remained an obstacle, as it is still divided into departments, each focused on the development of a specific type of infrastructure (eg roads or railways). This has in practice led the fund to finance these mobility solutions rather than others. "The ministry focuses on the infrastructural fixes, because that's easier . . . to implement with the way [they are] organised", a local mobility expert commented. This resonates with the account of a national mobility administrator: "If you look at the first exploration phase . . . the result is a complicated map with all kinds of shapes and lines. . . . And when that has to be translated into concrete projects, these are always infrastructure lines. So all the integration that was put into the process . . . gets lost." However, these limits have presented opportunities for other national actors to promote sustainable mobility policies. For example, the Dutch Ministry of the Interior was developing a project to build thousands of new homes in the growing MRDH region. This project clearly required a transport system to serve the newly built neighbourhoods. However, this could not be guaranteed via the infrastructure fund, which, as mentioned, only allows existing bottlenecks to be resolved. Moreover, even if the new infrastructure could be financed through the fund, this would exceed the project's strict emissions limits. To overcome this constraint, the Ministry of the Interior initiated a cooperative

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[87] The urban dimension of the latter initiative is now directly enshrined in the European Regional Development Fund Regulation (Art 11 Regulation (EU) 2021/1058 on the European Regional Development Fund and on the Cohesion Fund OJ L 231, 60), which prescribes that a minimum of 8% of the budget should be spent on projects directly selected by cities.

[88] See Ministry for Infrastructure and Environment, "Spelregels van het Meerjarenprogramma Infrastructuur, Ruimte en Transport (MIRT)" (Rules for the Multiyear Programme Infrastructure, Spatial Planning and Transport) (2016) <https://zoek.officielebekendmakingen.nl/blg-790167.pdf> (last accessed 20 February 2023). For a summary in English <https://www.government.nl/documents/leaflets/2018/02/07/the-dutch-multi-year-programme-for-infrastructure-spatial-planning-and-transport-mirt—summary> (last accessed 20 February 2023).

programme with the Ministry of Infrastructure, the region and local authorities to find solutions together. The initiative, called the Mobility and Urbanisation Programme (MoVe),[89] started by identifying common challenges and objectives among the actors involved – from climate to agglomeration benefits, transport provision, an attractive environment, a strong economy and an inclusive society – and used that as a basis for further consultations. "The departments are still going their own way", admitted one of the administrators involved, but "our ministry first agreed to pay to make housing possible in the short term and, from that point, we had a good discussion with the Ministry of Infrastructure" regarding an integrated plan that ultimately included climate-friendly mobility solutions to reduce car traffic.

A second challenge to cross-sectoral coordination at higher levels is a risk of being dominated by actors supporting economic interests, which favour solutions that reduce emissions instead of transforming mobility patterns as advocated by cities. This has emerged more clearly in national ministries that have recently become interested in mobility and for which cities were not regular stakeholders. For example, in the process of developing mobility solutions in the National Climate Agreement, the Ministry of Economy and Climate Policy involved a range of actors, but cities were only represented by the Association of Dutch Municipalities (VGN). This favoured the inclusion in the agreement of commitments focused mainly on decarbonising motor vehicles.[90] One participant observed that since "all measures in the climate agreement needed to be calculated [based] on cost-effectiveness" and for mobility "a lot of the effects were behavioural . . . only the measures . . . [for which] the costs and benefits were known" were eventually adopted by the Ministry in the agreement. Similarly, at the European level, while cities are stakeholders of DG MOVE (Mobility and Transport), industry lobbying is particularly strong in other DGs (such as DG Grow, for the internal market, industry, entrepreneurship and small and medium-sized enterprises). This has led to mobility measures that deviate from the paradigm pursued by cities. An example is the recent "EU Mission: Climate Neutral and Smart Cities". According to a local representative, the emphasis of this programme is shifting to "electrification of mobility and electro mobility, [while] the aspect of connected and shared auto mobility, which is . . . less cars", is being pushed to the background. In EU multi-level governance, this issue is exacerbated by the fact that national authorities can get in the way strategically, especially when funding and hard law are at stake. This emerged, for example, in connection with Directive 2014/94/EU, on the deployment of alternative fuels infrastructure.[91] The poor implementation of this Directive has been attributed to the fact that few central authorities consulted local governments when designing solutions.[92] "The national level is a layer that can make it or break it", said one interviewee.

V. Discussion

Pressed by the present climate emergency and policy events that have compelled increased support, many actors are now pursuing decarbonisation as a key objective in the

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[89] For an explanation of the programme, see <https://move-rdh.nl/over+ons/default.aspx> (last accessed 20 February 2023).

[90] See Netherlands Bureau for Economic Policy, *Analysis Evaluation draft Climate Agreement and Cabinet Variants* (2019) <https://www.cpb.nl/sites/default/files/omnidownload/CPB-Communication-13March2019-Evaluation-draft-Climate-Agreement-and-Cabinet-variants.pdf> (last accessed 20 February 2023).

[91] Directive 2014/94/EU of the EU Parliament and of the Council on the deployment of alternative fuels infrastructure (2014) OJ L 307.

[92] See Eurocities, *Better alternatives for city authorities: EUROCITIES policy paper on the revision of the alternative fuels infrastructure directive* (2020) <https://eurocities.eu/wp-content/uploads/2020/07/EUROCITIES_Better_alternatives_for_city_authorities_FINAL.pdf> (last accessed 20 February 2023).

transition towards sustainable mobility. This paves the way for greater alignment between and within levels, but also urges for attention to be paid to how this objective is understood and integrated with others in the governance of sustainable mobility. Despite displaying diverse characteristics, we found Maastricht and Rotterdam to be rather consistent in the challenges and complexities they face regarding the integration process. This section analyses these elements and examines potential solutions to emerging issues.

In line with broad observations in the transport literature,[93] our case studies confirm that two competing ways of framing the decarbonisation of mobility still dominate the policy debate: one promoting a behavioural change (ie modal shift) that reconfigures mobility practices towards active modes and public transportation; and another supporting a shift to cleaner technology to fuel motorised mobility, maintaining it as the predominant transport mode. The first frame is consistent with the concept of the climate-connected city and associates a predominantly car-based mobility paradigm with GHG emissions, as well as with health issues, congestion and the consumption of urban space. In the case studies, this perspective was expressed by actors exercising functions that influence spatial development, such as local mobility experts and housing and spatial planners at the local and national levels. By contrast, the second frame, because of its narrower understanding of the decarbonisation of mobility,[94] seems to have accrued greater support, particularly in economic departments of local, national and EU administrations, as well as among mobility experts at higher levels. Since these actors approach mobility from economy- and technology-dominated sectors, with little affinity for slower modes (cycling and walking), and they mainly represent the interests of local economic stakeholders (eg private developers, shopkeepers and hotel owners) or national industries (eg the automobile industry and logistics), they share the conviction that maintaining motorised transport is necessary for economic growth, in cities and nationwide.

However, the confirmation that these two competing frames still dominate the political discourse, even in a country pioneering sustainable mobility and decarbonisation such as the Netherlands, is problematic. Scientific evidence[95] and academic studies[96] increasingly argue that, although these frames may develop in parallel,[97] some level of behavioural change, as advocated by the first frame, will be inevitable for cities to meet current environmental and climate targets. By contrast, a technology-only approach in line with the second frame, besides leaving broader sustainability goals unfulfilled, would not be

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[93] For a similar account of two competing frames dominating the policy approach to transport pollution, see C Mullen and G Marsden, "Mobility justice in low carbon energy transitions" (2016) 109 Energy Research & Social Science Volume 111. See also L Chapman, "Transport and climate change: a review" (2007) 15 Journal of Transport Geography 354–67; H Dyrhauge, "The Road to Environmental Policy Integration Is Paved with Obstacles: Intra- and Inter-Organizational Conflicts in EU Transport Decision-Making" (2014) 52 JCMS: Journal of Common Market Studies 985; R Hickman, P Austin and D Banister, "Hyperautomobility and governmentality in Auckland" (2014) 16 Journal of Environmental Policy and Planning, 419.

[94] This confirms Adelle and Russel, supra, note 34.

[95] See in this sense the latest Intergovernmental Panel on Climate Change's (IPCC) report on transport, in P Jaramillo, S Kahn Ribeiro, P Newman, S Dhar, OE Diemuodeke, T Kajino et al, "Transport" in PR Shukla, J Skea, R Slade, A Al Khourdajie, R van Diemen, D McCollum et al (eds) *IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge, Cambridge University Press 2022). See, along the same lines, the observations made on the state of transport in the EU, European Scientific Advisory Board on Climate Change, *Scientific Advice for the Determination of an EU-Wide 2040 Climate Target and a Greenhouse Gas Budget for 2030–2050* (2023) pp 64–65.

[96] J Anable, C Brand, M Tran and N Eyre, "Modeling transport energy demand: a socio-technical approach" (2012) 41 Energy Policy 125–38; C Brand, T Götschi, E Dons, R Gerike, E Anaya-Boig, I Avila-Palencia et al, "The climate change mitigation impacts of active travel: evidence from a longitudinal panel study in seven European cities" (2021) 67 Global Environmental Change 102224; Banister, supra, note 2; Schwanen et al, supra, note 10.

[97] Chapman, supra, note 93.

sufficient to decarbonise mobility. This is partly due to long implementation times and partly because it does not address aspects such as embodied emissions.[98] In this regard, our case studies elucidate which policy instruments and organisational arrangements can facilitate or hinder the design of transformative measures to accelerate the decarbonisation of urban mobility in line with the first frame mentioned above.

At the local level, the cities demonstrate that a policy instrument such as the GOVI, which enables the formulation of cross-departmental spatial development strategies that take into account a wide range of sustainability objectives, can play a central role in promoting a modal shift in mobility. Indeed, this instrument was found to strengthen the connection between urban mobility and other policy areas affecting mobility, which is crucial to accelerate the transformative solutions advocated for in the first frame. Such a connection also allows for city-wide solutions to mobility problems to be proposed, in view of their cross-border nature. Besides resolving the shortcomings of earlier planning tools that did not incorporate climate and energy objectives into their assessments,[99] this instrument has made Dutch cities pioneers in the adoption of sustainable and integrative planning processes for mobility policies, as advocated by the European Commission in its Sustainable Urban Mobility Plan (SUMP) concept.

However, the case analysis highlights that this instrument must necessarily involve the most relevant actors within the city and be used to formulate concrete trade-offs between different forms of mobility and competing ways of using space (eg which roads to close to traffic and which modes to favour over others) rather than general visions. As such, the conflicts that spatial interactions inevitably generate can be addressed early on in the policy process, which fosters broad support for implementation. Clearly, structures and procedures must support this coordination effort. In this respect, Rotterdam's peculiar setup, with a dedicated sustainability department working as a counterpart to its other departments, did not seem to offer specific advantages over the traditional organisation in Maastricht, where policymaking processes were employed to allow different departments to cooperate. The main difference between the two cities was in coordination at the regional level. Having formal regional cooperation, such as the MRDH, with its own funding, broadly drawn tasks and the requirement to consider multiple sustainability objectives, enabled Rotterdam to work together with neighbouring municipalities towards a coherent, long-term vision combining transformative solutions for decarbonising mobility and other domains. It also made it possible to speak with a common voice at higher levels, which proved essential in negotiations for funding. In contrast, Maastricht's form of regional cooperation, with its limited funding and narrow tasks, remained small in scale and could not provide a means for the city to achieve substantial results regarding sustainable mobility.

At the same time, the analysis highlights that the effects of integrative processes cannot be taken for granted in cities either. Indeed, the success of the municipal cross-sectoral strategies depends on a broader and thus more complicated decision-making process, and the legal framework does not establish a clear hierarchy among the multiple objectives to be pursued. As such, transformation strategies risk falling prey to opportunistic agendas,

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[98] See in this sense the recent report on the future of the mobility in cities by the European Commission: European Commission, "The future of cities" (2021) <https://urban.jrc.ec.europa.eu/thefutureofcities/mobility#the-chapter> (last accessed 20 February 2023).

[99] See the analysis on the Dutch system by the Knowledge platform for traffic and transport (CROW-KpVV), "Verkeers- en vervoerplan duurzamer met Sustainable Urban Mobility Plan (SUMP)" ("Traffic and transport plan more sustainable with Sustainable Urban Mobility Plan (SUMP)") (2012) <http://www.crow.nl/vakgebieden/verkeer-en-vervoer/bibliotheek?url=vakgebieden/verkeer-en-vervoer/bibliotheek> (last accessed 20 February 2023). On a similar note, see A May, S Boehler-Baedeker, L Delgado, T Durlinm, M Enache and J-W van der Pas, "Appropriate national policy frameworks for sustainable urban mobility plans" (2017) 9 European Transport Research Review 21. For an analysis of cities in other countries, see European Court of Auditors, supra, note 5.

particularly of actors supporting the second frame, and being replaced by suboptimal compromises that promote mobility solutions that are incompatible with sustainability. Testifying to this risk is Maastricht's failed proposal to include a reduction of downtown parking in its GOVI, which was rejected by the economic development department, which primarily supports the interests of local economic actors within the city administration.

At higher levels, cross-cutting instruments and procedures seem less effective at coordinating different departments around a broad set of sustainability objectives, as most of these departments subscribe to the second, narrower frame. Although the national strategy for spatial planning and the environment, or NOVI, reinforces the need for policy coordination, it still contains rather broad objectives. This may give cities room to develop their own mobility strategies and was perhaps motivated by the "higher" perspective from which national actors approach territorial issues. Yet, it also leaves most national ministries free to pursue an approach that maintains car vehicles as the main mode of mobility. The fact that, for example, the Dutch Ministry of Economic Affairs selected the measures on mobility to be included in the National Climate Agreement based on the magnitude of CO_2 gains clarifies the challenge. Similarly, while the European Green Deal has increased the importance of decarbonisation in all policy areas, it has left each DG free to follow its own understanding of what this implies in practice. Our case studies show that this has allowed some DGs, especially those dealing with industrial sectors, to favour solutions focused on "cleaning up" emissions rather than behavioural change.

To reinforce the need to account for the broader implications of policies for the transition to sustainable mobility, it would be useful for cities to be given greater consideration in the decision-making processes of higher-level institutions. As in other contexts,[100] the analysis here suggests that decarbonisation has opened up a policy space for cities to exercise greater influence at the national and EU levels in the field of mobility. This effect is particularly visible in the EU, which has for the first time recognised the role of cities in climate change in official policies and funding management and is exploring a new conceptualisation of subsidiarity to influence local sustainability strategies. However, this vertical interaction also covers policy areas where cities are not traditional stakeholders, thereby making it difficult to adopt transformative mobility measures.

Regulatory instruments that set limits on environmental emissions also play a key role in promoting transformative changes in mobility. These act as a "stick" to make carbon emissions reductions the main policy objective to be pursued, thereby influencing the types of mobility solutions advanced through other instruments and interventions. However, this effect only emerges when these instruments impose sufficiently strict emissions targets that apply across the board and stringent deadlines for their achievement. Thus, the weak limits set by the EU Air Quality Directive seem to be the reason why the Directive today plays a very limited role in fostering sustainable mobility. This also explains why both Maastricht and Rotterdam have discontinued most measures set up to secure compliance with this Directive in the past.[101] Similarly, the long-term goals of the National Climate Act (set for 2030 and 2050) seem geared mainly for less controversial measures such as "cleaning up" vehicle emissions than for measures promoting behavioural changes, which would probably provoke greater political opposition. The example of Rotterdam, where the creation of a new, stricter LEZ to reduce vehicle emissions was postponed by politicians due to fears of public outcry, demonstrates that binding targets can be ignored if they are not made urgent by strict

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[100] For a similar dynamic at the international level, see the S Bouteligier, *Cities, Networks and Global Environmental Governance: Spaces of Innovation, Places of Leadership* (Abingdon, Routledge 2013); J Lin, *Governing Climate Change: Global Cities and Transnational Lawmaking* (Cambrdige, Cambridge University Press 2018).

[101] For this issue, see Proposal for a Directive of the EU Parliament and of the Council on ambient air quality and cleaner air for Europe (recast) COM(2022) 542 final.

deadlines. In contrast, despite mainly impacting new construction projects, the EU Habitats Directive and its limits on nitrogen deposition gained added urgency as a result of an immediate compliance obligation due to a court ruling. This also served to strengthen the strategic coalition between mobility and housing experts. In order to realise new construction projects and provide newly built areas with an adequate transport system, despite the stringent limits, housing experts took the lead in developing new transformative solutions for more sustainable building and mobility. The MoVe programme clearly reflects this result and deserves to be extended to the whole of the country. However, the effect appears more intense in Rotterdam, where population growth and economic growth make emissions limits – and with them the need for transformative solutions – more urgent compared to the shrinking city of Maastricht.

Experiments, too, are important for promoting a sustainable and decarbonised urban mobility trajectory. Testing is necessary particularly for the transformative solutions advocated for within the first frame. While cities and higher-level actors have expanded their use of experimentation in mobility, such interventions have two major limitations. First, it can be difficult to scale up political support across the whole of a city. However, without scaling up, the effects of experiments remain limited relative to the nature of mobility problems.[102] Second, experiments promoted by higher-level institutions must align with local mobility strategies and not counteract other sustainability-compatible interventions. This difficulty was observed in the "Spread and Avoid" campaign, whose goal of reducing emissions without changing transport modes conflicted with the Rotterdam's *trias mobilica* strategy.

Economic and fiscal instruments appear to be the major barriers to developing mobility policies that take into account broader sustainability objectives. Our analysis shows that, in line with the narrow-frame perspective of the Dutch Ministry of Economy and Climate Policy, national taxation is still focused on "cleaning up" vehicle emissions, with rebates granted for cleaner vehicles and company cars. As a result, some pollution reduction has been achieved, but other sustainability issues (particularly congestion) have remained unaddressed, particularly impacting urban areas. Similarly, while local policymakers express a principled ambition to use fiscal measures to change mobility behaviours, the limited leeway allowed by the national legal framework deprives them of the ability to do so. In this context, a recent reform allowing cities to differentiate parking fees based on CO_2 emissions seems inadequate to fill this gap. Instead, a broader fiscal reform is required in which taxation reflects the full costs of a transport mode (eg including environmental, congestion and accidents). As for national and EU funding, there even seems to be a disconnect with the second frame, as key national and EU instruments disregard any sustainability considerations, apart from the environmental emissions directly produced by a construction project. Indeed, while both the MIRT and the TEN-T involve multiple actors across all levels in decision-making processes, both are based on assessment criteria that consider only bottlenecks, and funding is allocated to increase road capacity.[103] In our case studies, this had two major consequences. First, to avoid losing financial support for projects that take years to develop and for which they lacked resources, both cities were led to readjust or even abandon their sustainable mobility strategies and build new road infrastructure, which resulted in more congestion. An example is Rotterdam's struggles to build a third bridge exclusively for public transport. Second, once built, transport infrastructures limit the impacts of solutions aimed at reducing vehicle numbers and can also be expensive to abandon if the necessity arises, especially when management is

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[102] K Kern, "Cities as Leaders in EU Multilevel Climate Governance: Embedded Upscaling of Local Experiments in Europe" (2019) 28 Environmental Politics 125.

[103] See similarly F Pettersson, V Stjernborg and C Curtis, "Critical challenges in implementing sustainable transport policy in Stockholm and Gothenburg" (2021) 113 Cities 1–10.

outsourced. This conundrum is demonstrated by Maastricht's new highway tunnel and central parking lot, which led to increased car mobility in the city and cannot be abandoned without severe economic losses. To align funding with the broader decarbonisation agenda, the proposal for a new TEN-T Regulation now requires a SUMP for each urban node.[104] The Dutch government is also planning to replace the infrastructure fund with a new national mobility fund in which attention is refocused from solving congestion through infrastructure to addressing a set of problems (including climate, emissions, safety and urbanisation) by way of an open-ended set of solutions (eg influencing behaviour or spreading mobility over time).[105] While this is encouraging, these reforms must be underpinned by integration processes that provide a clear hierarchy among the various sustainability objectives in choices of mobility measures. Otherwise, these interventions risk being subject to political bargaining and watered-down compromises, as in the other cross-cutting instruments assessed in this study.

VI. Conclusion

This study explored the challenges and complexities of the multi-objective governance of sustainable urban mobility in the EU. Building on the concept of the climate-connected city and drawing on an empirical investigation of two Dutch cities, it reflected on how climate change is integrated with other sustainability goals into transport policies across all levels of government in order to intensify a decarbonisation trajectory in urban mobility.

The analysis confirms previous observations that two frames of decarbonised transport are still competing in the policy discourse: one in which climate change is linked to other sustainability objectives to promote a behavioural change in mobility; and another that sees decarbonisation as merely "cleaning up" emissions from motorised vehicles, while preserving them as the predominant mode of transport. This observation shows that, even in a country pioneering decarbonisation such as the Netherlands, transport policy is not yet fully in keeping with current scientific evidences, which call for measures in line with the first frame to achieve the EU's climate and environmental goals.

The case studies further elucidate that the first frame is supported by the two types of instruments: those aimed at developing cross-sectoral strategies in the area of spatial development; and those imposing strict regulatory limits on emissions across the board. By enabling strategic actors in mobility and other mobility-generating functions (notably housing and land use) to work together and by requiring the consideration of broader sustainability goals, these instruments are able to develop concrete synergies in order to redesign urban space around slower modes of mobility. This integrative effort also requires the creation of structures and processes that allow coordination between the aforementioned functions at national and regional levels, given the cross-border nature of mobility.

However, these effects cannot be taken for granted. At the local level, economic actors, who see motorised mobility as essential for economic development, may exploit the more complicated decision-making processes involved in spatial development instruments to push for suboptimal solutions that still favour car mobility. This risk emerged in both cities, regardless of size and governance capacity, and is exacerbated when regulatory instruments do not impose stringent emissions targets across the board. At the national and EU level, economic and fiscal instruments, as well as voluntary climate agreements,

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[104] See Proposal for a Regulation of the EU Parliament and of the Council on Union guidelines for the development of the trans-European transport network, amending Regulation (EU) 2021/1153 and Regulation (EU) No 913/2010 and repealing Regulation (EU) 1315/2013, COM(2021) 812 final.

[105] See National Climate Agreement, *supra*, note 57, p 81.

seem equally to support measures to "clean up" motor vehicle emissions and invest in road capacity. This is due to the fact that these instruments are developed by actors who support the second, "narrower" frame of decarbonised mobility. However, this can hinder the design of modal shift solutions, as cities rely on external funding to support their mobility policies and their perspective is not fully incorporated into the policymaking process at the national and EU level.

These findings need to be complemented by studies on a broader set of cities, with varying degrees of autonomy and capacity, including those lagging behind in climate action. As it stands, this study suggests that, in order to accelerate the decarbonisation of mobility and support motor vehicle-reduction measures, economic and fiscal instruments influencing mobility should be aligned towards the broader consideration of climate and sustainability goals. Such reform, moreover, should be accompanied by strict limits on emissions and give greater attention to the urban dimension of mobility within higher government levels.