

Article

Greening Vienna. The Multi-Level Interplay of Urban Environmental Policy–Making

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Abstract: Vienna is widely recognised as an example of urban sustainability, crowned as one of the most liveable cities worldwide by several quality of life rankings. Despite being highly committed to incorporating the ecological and social dimension into its urban development strategy, Vienna is undergoing a deep transition, orienting its urban policy more closely toward economic criteria and techno-managerial solutions to climate change. While European capitals have been extensively studied, research on Vienna’s environmental policy strategies lacks international visibility in urban studies. To address this paucity of research, this article identifies and unpacks critical junctures, moments characterised by policy shifts occurred in the last 30 years. The article disentangles the synchronisation or de-synchronisation of the inter- and cross-level relations underpinning Vienna’s policy changes. From a methodological standpoint, we employ a process tracing method relying on evidence gathered through the analysis of regulatory and policy documents complemented by interviews with key informants involved in the policy-making process at different territorial levels. The findings cast light on the benefits of and barriers to multilevel coordination in the realm of climate policy and adaptation strategies, pinning down the critical junctures and the multilevel interaction in Vienna’s climate policy evolution.

Keywords: climate policy; Vienna; urban political ecology; multi-level governance; process tracing

1. Introduction

As witnessed by the recent wave of protests organised by environmental movements around the world, climate change is perceived by a growing number of people as an urgent issue that policy-makers should hasten to solve. However, neither international organisations—such as the UN and the EU—nor most national governments seem to be highly committed to fight climate change. Surely, nation-states have taken part in international declarations (such as the Paris Agreement that followed the United Nations Climate Change Conference held in Paris in 2015) and designed policy strategies (e.g., the EU 2050 long-term strategy), but the translation from declaration to practice is a long way to go.

While national and supra-national levels of authority do not seem to be overly concerned about the state of the environment, many cities have strived to act more concretely to limit the negative impacts of climate change. Although often held responsible for global warming and climate change, many European cities are committed to tackle environmental issues, by implementing strategies to mitigate its effects on the urban environment [1]. Cities constitute site of ecological experimentation [2], a “frontier space” where ecological innovation takes place [1] (p. 2). Indeed, many European cities have engaged with green experimentation, both in terms of governance and policy instruments, to address environmental degradation [2,3].

This does not entirely come as a surprise, as it will be mostly cities—especially densely populated metropolises—that bear the costs of climate change: increased temperatures in cities and extreme

weather phenomena will have worrying consequences on urban populations. For instance, the 2003 European heatwave killed approximately 70,000 people [4]. In particular, marginalised or elderly people's health will be predominantly affected by urban heat waves and urban heat islands [5]. Given this gloomy scenario, many metropolises, especially capital and secondary cities, have implemented radical measures to expand green spaces, incentivise smart mobility, or reduce energy and resource consumption [6,7].

Among those virtuous cities, Vienna has been widely recognised as a model of urban sustainability, crowned as one of the most liveable, greenest and smartest cities worldwide by several rankings [8–11]. The Austrian capital earned such a reputation thanks to its urban policies sustaining a high-density and mixed-use urban form, efficient public transportation system, incentives to active mobility, eco-friendly affordable housing, and high-quality public green spaces. Despite being highly committed to incorporating the ecological as well as the social dimension into its urban development strategy, Vienna has undergone a deep transition over the course of the last 30 years (1989–2019), progressively orienting its urban policy towards economic criteria, and privileging techno-managerial solutions to climate change.

Nonetheless, systematic empirical analyses of relevant shifts in climate policies at the urban level and their implications for Vienna have so far remained scarce. Furthermore, while European capitals such as Berlin, London, and Paris have been extensively studied, research on Vienna's climate policy and adaptation strategies lacks visibility in urban studies at the international level. To address the paucity of research on Vienna's climate policy and its trajectory, this article seeks to answer three main questions: How did Vienna become a world-renowned green city? What policies and strategies have been implemented to make Vienna such a virtuous example? How have the multi-level governmental arrangements influenced Vienna's environmental policy-making and performances?

To answer these questions, our analysis pursues two objectives. On the one hand, it looks for potential critical junctures, that is, points in time where environmental policy-making and the underlying political discourse changed. On the other hand, and in line with the purpose of this Special Issue, we examine the synchronisation or de-synchronisation of the inter- and cross-level relations within which the city is embedded, by identifying the policies and laws introduced in the field of climate policy by the various levels of government. As such, the analytical focus of our article is on the municipal level, conceptualised as entangled in a wider context forged by the multiple interactions among supra-local levels.

To theoretically frame our enquiry, we draw on the urban political ecology (UPE) scholarship, which provides a sophisticated and critical lens through which to interpret the changes in the City's political discourse. Nevertheless, UPE is not well suited to unpack the multi-tier interactions and dynamics: while placing emphasis on the concept of *scale*, the UPE scholarship ignores the *multilevel* interplay characterising the policy-making process in EU countries. Therefore, to shift the analytical focus from the *scale* to the *level*, we borrow the terminology of the multi-level governance (MLG) literature. By combining the analytical depth of UPE with the administrative parlance of the MLG framework, we are able to grapple with the mechanisms regulating the interactions among the different governing levels.

From a methodological standpoint, we draw on a process tracing method relying on evidence gathered through the analysis of regulatory and administrative documents and grey literature. This method helps unravel the evolution of Vienna's green agenda and the magnitude of the impact of the interventions from the different levels of government. To validate the document analysis, eight interviews with local and national officials working in municipal and federal departments devoted to environmental protection (broadly understood as a realm involving policies on transport, air pollution, and green spaces) were undertaken. The findings cast light on the multi-level coordination dynamics and their outcomes in the realm of climate policy and adaptation strategies. As a result, our article will contribute to better understand at which territorial levels environmental policies are regulated and how the different levels interact. In particular, our findings show how the City of Vienna tried

to push its own green agenda, by enacting legislation and elaborating policy strategies and urban development plans to boost the ‘environmentalness’ of the municipality. While the City has necessarily incorporated laws and guidelines from upper-level authorities, it has shown the willingness to go beyond top-down prescriptions. As such, this article seeks to show how, to fully understand local climate policy-making, it is crucial to disentangle the manifold interactions among different actors and the various governing levels.

This article is organised as follows. After this introduction, in Section 2, we will lay out our theoretical framework. In Section 3, we will illustrate the methodology and in Section 4, the results will be reported. In Section 5, the data will be discussed and concluding reflections outlined.

2. Theoretical Framework

As anticipated, to analyse the evolution of Vienna’s climate policy, our analytical framework hinges on two accounts: UPE and MLG. The reliance on the UPE account is driven by two main reasons. First, we want to emphasise the relevance of cities in socioecological processes, being primary sites where the effects of environmental issues and related policies are more evident. Indeed, as it has been observed, urban studies, and urban sociology in particular, have ignored nature and its liaison with urban processes [12]. Second, we consider climate policy, and environmental policy at large, as a crucial yet contested policy field, where the urgency to protect the environment clashes against the dominant discourse of economic growth. Therefore, the UPE scholarship enables to critically approach the economic and political changes Vienna underwent in the last thirty years in the realm of climate policy, shedding light on the potential changes in the policy repertoire and the underlying political discourse.

As Sayre [13] (p. 512) argues, UPE “sets itself the task of understanding how [. . .] socationatural processes are produced and how they interact with each other and with people, markets, built environments, and institutions.” Indeed, a key task of this theoretical stream is to uncover how natural resources are unequally distributed among social groups and how the environment is often instrumentally exploited by the elites to preserve their influence [14]. More in detail, as Blaikie and Brookfield [15] (p. 17) explained, “‘political ecology’ combines the concerns of ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land-based resources, and also within classes and groups within society itself.” Building on Harvey’s [16] argument that cities cannot be thought out as unsustainable, UPE theorises against the long-standing dichotomy between nature and cities [12,14,16–18]. Rather than considering cities as artificial, “unnatural” [16] (p. 186 in 14: p. 908), and thus responsible for the degradation of nature, UPE scholars reinstate nature in the urban environment, seeing the latter as the by-product of “socially mediated natural processes” [14] (p. 908). As such, UPE hinges on the economic and social processes that construct the urban environment and unevenly allocate resources across social groups.

As its name suggests, the political dimension plays a crucial role in UPE enquiry, evident in the unjust distribution of natural resources, which mirrors socio-economic inequalities deeply entrenched in society [12]. Politics is considered as a causal factor of socio-ecological processes, both in terms of power dynamics and discourses that shape the urban environment [19,20]. Indeed, contributions embracing UPE have been devoted to disentangle the “power relations” playing out in and shaping the urban environment [21] (p. 502).

Turning to post-structuralism, the UPE scholarship has drawn attention toward the notion of governance, taking a critical stance towards the “apolitical” and “naïve” nature of the related literature [22] (p. 2). In particular, UPE scholars point out the underlying normativity of the “good governance” concept, which conceals an attempt to favour technical solutions overlooking social inequalities, as well as the illusion that the inclusion of actors other than the state in policy-making would equate with a more horizontal type of government [22] (p. 2, converted commas in original). Given the prominent role of politics in constructing socio-economic inequalities and their link with nature, some authors have examined the “techno-managerial” turn in environmental policy, which

reifies cities as “physical containers”, as “built environments” [23] (p. 49). In such a view, environmental policy-making is “post-political”, based on scientific criteria and bound to achieve seemingly objective targets [20]. In relation to the governance of cities’ transition towards climate change policy and climate mitigation, this means, as Barak [23] (p. 48) reminds us, to critically look at cities and their “problem solving” attitudes towards climate change and climate mitigation. In effect, local authorities have invested in infrastructural works, green space, waste sorting, low-carbon public transport systems, seen as effective solutions to tackle the drawbacks of climate change [23]. However, to become green cities requires more than technical and managerial strategies, which, although important, often presume that environmental considerations are not tied in with social and political relations [23]. Indeed, the reliance on techno-fixes—that is, energy efficient low-carbon technologies—overestimates their emission neutrality, which always requires energy and material resources to be produced and to function [24]. Furthermore, “a techno-managerial approach often rests on the misleading assumption that we all understand environmental problems (and their causes) in the same manner, and that we all agree on how to solve them” [23] (p. 48). Ultimately, such technological solutions to climate change have been prompted by “a global urban intellectual and professional technocracy” pursuing a “‘smart’ socio-ecological urbanity”, which, through efficient and sustainable buildings and governance, will leave the capitalist urban system untouched [25] (p. 610).

Following the UPE’s precepts, our analysis will factor in Vienna’s ‘problem solving’ attitudes in environmental policy-making, to understand whether it is value-laden, and thus political, or purely instrumental and post-political.

While focusing on the city as an analytical unit, UPE has paid heed to how globalising (or rather glocalising) forces are shaping the link between cities and nature [12]. Notwithstanding, the UPE literature has been criticised for its inherent “methodological cityism”, whereby cities are conceived as the most salient loci for the study of socio-economic and political phenomena, which actually stretch beyond the urban boundaries [26]. Indeed, climate change is an issue that affects multiple dimensions, from the individual to the global level. As such, while an analytical focus on cities permits to examine how socio-ecological processes actually play out, it is fundamental to factor in the intervention of upper-level authorities and non-state, non-public actors in policy-making.

In this respect, UPE scholars submit how cities are embedded in a multi-scalar system, where scales mutually influence each other. Although the concept of scale has been central to political ecology research, and has even spurred “a political ecology of scale”, it has been somehow played down [13] (p. 505). The same holds true for UPE, where the multi-scalar arrangements and governance practices that shape environmental policy have been overlooked [27]. In addition to the limited attention to scales, even more problematic is the little analytical importance given to the notion of level, subsumed in that of scale, but not explicitly analysed. While the concepts of power and power relations lie at the core of UPE research, the analysis of inter-level interactions appears to be on the background, thus neglecting an important component of socio-ecological governance. Notably, scale and level are not synonyms: while the former indicates “spatial, temporal, quantitative, or analytical dimensions used to measure and study any phenomenon”, the latter defines “units of analysis that are located at the same position on a scale” [28] (p. 218). Moreover, the depiction of inter-scalar arrangements made by UPE scholars is outdated. The view of “simultaneous ‘nested’ yet hierarchical [. . .] relationship between spatial scales” [14] (p. 913) has been superseded by the multi-level governance account, contending that the different tiers of governments are not encapsulated in one another as “Russian dolls” [29] (p. 1), but are “interconnected” [30] (p. 346).

As a result, building on Cash et al.’s [31] distinction of *scales* and *levels*, our analysis seeks to overcome the UPE’s limitation by combining the notions of scale and level. Indeed, our study encompasses two scales: the “temporal” and “jurisdictional” [31]. Within the first scale, our unit of analysis is annual, inasmuch as we strived to identify those points in time over the 1989–2019 period when Vienna’s climate policy significantly changed. As for the latter scale, as will be discussed in the following sections, we examined all the levels involved: from the local to the international

level—or “inter-governmental”, to borrow the term used by Cash et al. [31]. This analytical approach will enable us to identify which actors at different levels are responsible for specific policies, and of which competencies they are endowed. As such, our analysis is at the same time “cross-scale” and “cross-level”, inasmuch as it will uncover the temporal evolution across multiple jurisdictional levels [31].

Given the theoretical and analytical marginalisation of levels in UPE, we fill this gap by employing the constitutive concepts of the multi-level governance scholarship. Without rehearsing the broad debate on MLG, we want to underscore the main merit of this account, that is, its emphasis on the involvement of a plethora of deeply interconnected public and non-public actors in decision-making. This inter-connectedness constitutes the analytical linchpin of MLG, which will be employed in this article to complement the UPE approach.

The notion of MLG has been adopted in a variety of policy sectors, from cohesion policy to migration [32–35]. MLG has also attracted academic attention in the study of environmental policy-making, where a wealth of contributions has examined the multi-tier governing of environmental issues [34,36–39]. This sub-field of MLG literature stems from the assumption that environmental issues stretch across multiple levels, from individual to global, thus requiring the coordinated efforts of multiple actors and different governing levels. Despite the wide use of MLG in environmental policy analysis, we limit our borrowings to the multi-level and inter-linked conceptualisation of the EU polity, as we share those criticisms that define MLG more as a concept to analyse the cross-cutting governing arrangements in the EU, than a proper theory [35,40–42]. In particular, the main import from the MLG literature is its emphasis on “various patterns of allocation of power” and the multi-actor and multi-level interaction informing decision-making [35] (p. 272). In so doing, we endeavour to make UPE more interdisciplinary, by adding a political science twist to a primarily geographical analytical approach; likewise, we combine the critical bent of UPE with the institutional perspective of MLG. As will be discussed in the next section, from a methodological perspective, this implies the multi-level analysis of the drivers and outcomes of crucial shifts in political discourses and policy repertoire of the City of Vienna.

3. Methodology

To empirically address our questions, we adopt *process tracing* as a method to analyse the City of Vienna’s climate policy evolution. This method permits us to unravel the causal mechanisms by examining a phenomenon chronologically as a sequential series of events [43]. By applying process tracing in a qualitative way, we include ‘time’ as a variable in the formation of causal mechanisms on the basis of temporal orders of events (such as policy reforms at different governance levels). A probabilistic conception of process tracing—as applied here—allows identifying those causal mechanisms that operate in a specific context, where the same mechanism does not necessarily produce the same outcome [44] (p. 1152). Causal mechanisms, to use the words of Falleti and Lynch [44] (p. 1147), “tell us how things happen: how actors relate (. . .), how policies and institutions either endure or change, how outcomes that are inefficient become hard to reverse”. Critical junctures are moments that allow for “more dramatic change” and where path-dependent processes are initiated [45] (p. 341). Despite this notion of dramatic change, we orientate ourselves also towards the concepts of ‘drift’ and ‘layering’. Policy drifts are initiated by moments where external conditions shift, while layering refers to moments where new policies are added to existing ones [46] (p. 15).

Process tracing was structured in three phases. First, we collected European, national and local policy documents and ordered them chronically and by the jurisdictional level in a qualitative data analysis software (Table 1). First, local policy documents were analysed by applying thematic coding covering: (a) environmental values and problem-solving attitudes in the policy discourse including the formal allocation of power; (b) the problematization of ecological, social and economic challenges constructed in policy documents, and (c) instruments and evaluation. The analysis of the local policy discourse identified phases and critical junctures in Vienna’s environment policy-making. Second,

drawing on the outcome of the policy document analysis, we coded inductively the interdependence of critical junctures to: (a) geo-political, economic events and local challenges; (b) ‘climate/environmental’ action and attitudes on upper-tier levels, and (c) changes of horizontal actors-relation to govern local ‘environmental’ policies. Third, preliminary results on interdependences, phases and critical junctures were complemented by eight validation semi-structured elite interviews with local and national policy-makers, representing the most important actors in the formulation of the climate policy (Table 2). Data collection through interviews was concluded when saturation was reached. The interviews, conducted between June 2018 and October 2019 and fully transcribed, confirmed the identified events, problem-solving attitudes and interdependences.

Thanks to the process tracing method, we identified the critical junctures in Vienna’s ‘greening’ trajectory (Figure 1). These moments coincide with the laws passed and the strategic plans published by international organisations, the EU, the Austrian government, and the City of Vienna, which had a strong impact on Vienna’s policy trajectory. In particular, we looked at whether and how upper-level legislative and policy interventions influenced the municipal policy agenda, and if the latter operated more or less autonomously following its own green agenda. To do so, we examined the synchronisation or de-synchronisation of the inter- and cross-level relations, and if these have changed over time. In the following sections, the findings are presented and discussed.

Table 1. Policy and legal documents analysed (1984–2018).

Document	Years	Type (Law, Strategy, etc.)	Level (Municipal, Regional, National, EU)
Urban Development Plan (STEP)	1984, 1994, 2005, 2015	Strategy	Municipal/Regional
Climate Protection Program Vienna	1999–2009 (KliP I); 2010–2020 (KliP II)	Program	Municipal/Regional
Climate Protection Program, Reports to the city council	2002, 2003/2004, 2007, 2009, 2012, 2015, 2018	Reports	Municipal/Regional
Climate Protection Program, Evaluation reports	2002–2018	Reports	Municipal/Regional
Viennese Environmental Reports	2004–2018	Reports	Municipal/Regional
Traffic Concept	1994	Strategy	Municipal/Regional
Masterplan Traffic	2003	Strategy	Municipal/Regional
Evaluation and Update of Masterplan Traffic	2008	Strategy, Report	Municipal/Regional
Strategy Plan for Vienna	2000, 2004	Strategy	Municipal/Regional
Energy-Efficiency Program	2006	Program	Municipal/Regional
Research Report Smart City Vienna	2012		
Smart City Framework Strategy	2014	Strategy	Municipal/Regional
Urban Heat Island Strategy	2015	Strategy	Municipal/Regional
15a Agreement on building emissions	2009	Law	National/Regional
Climate Protection Law	2011	Law	National
Amendment to Climate Protection Law	2013	Law	National
Program of measures 2013/2014 of federal states and federal government	2013/2014	Program	National/Regional
Program of measures 2015–2018 of federal states and federal government	2015	Program	National
2020 Climate and Energy Package	2007	Strategy	European
2030 Climate and Energy Package	2014	Strategy	European

Table 2. List of the research participants.

Respondents	Departments
Respondent 1	Federal Ministry for Sustainability and Tourism, Section IV/4 Energy efficiency and buildings, and Section IV/1 Climate policy coordination
Respondent 2	Executive Office for the Coordination of Climate Protection Measures, City of Vienna
Respondent 3	
Respondent 4	MA22 Environmental protection
Respondent 5	MA50 Department of Housing Research
Respondent 6	Chamber of Labour Vienna
Respondent 7	MA18 Urban planning and development
Respondent 8	Viennese Ombuds office for Environmental Protection (WUA)
	Former mayor of Vienna

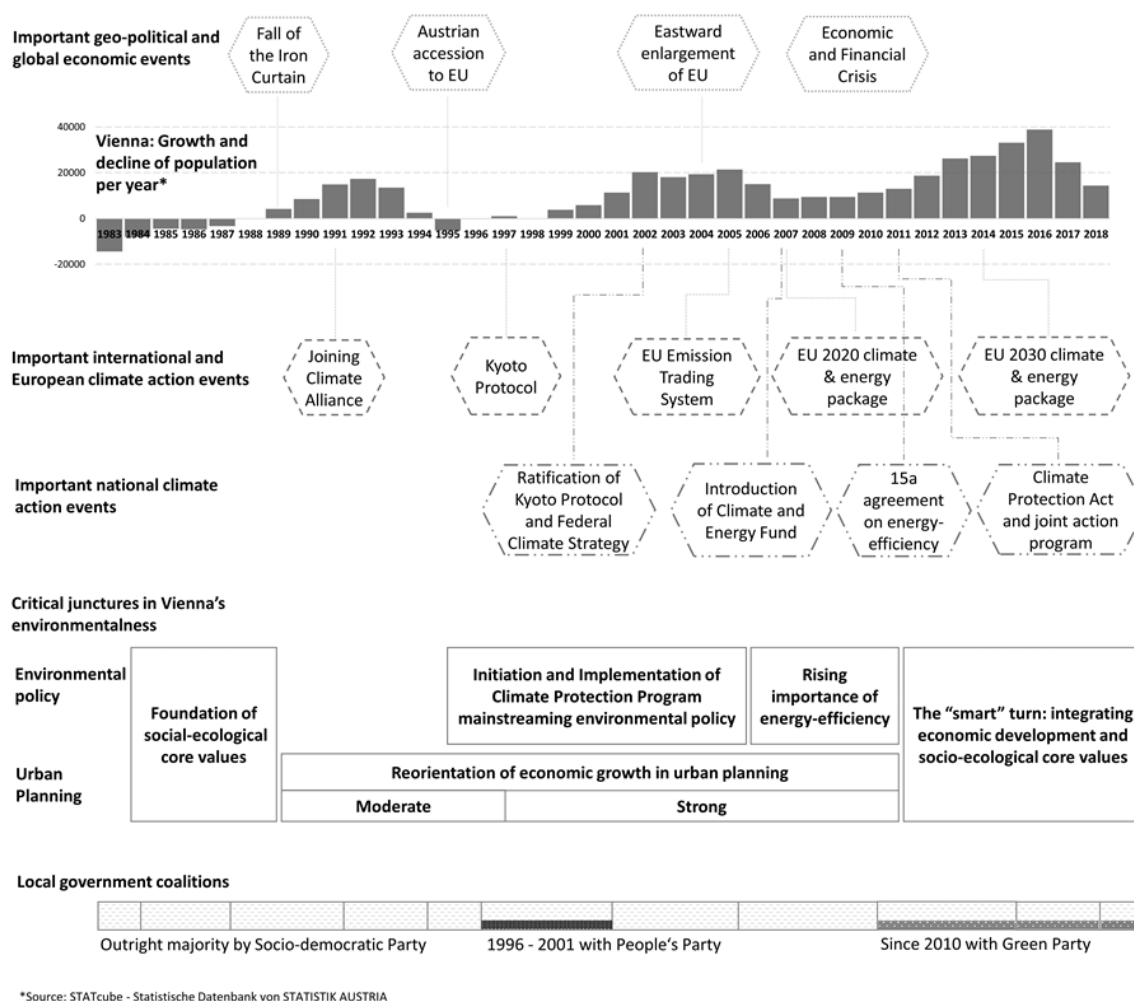


Figure 1. Vienna's Environmental Policy Trajectory.

4. Vienna's Environmental Policy Trajectory: Sound Environmental Foundations Shaken by Economic and Technological Pressure

The roots of today's Vienna's environmental policy can be traced back to the establishment of the Department of Environmental Protection in 1979. The power over environmental protection, including air quality, nature conservation, environmental law, waste and resource management such as water was allocated in this department aiming at the enhancement of Vienna's environment [47]. In the 1980s, the Department of Urban Planning and its "apodictic conception of planning" increasingly shaped the environmental discourse of the City (Respondent 8). The Planning's "preventive take on environmental protection" emphasised the quality of life of the residents, social justice and solidarity combined with the highest possible resource conservation [48] (p. 1). Being ruled by the Social Democrats since 1919—except under the Nazi domination between 1934 and 1945—the city developed a well formulated social-ecological problem-solving attitude during the 1980s. The latter prioritised urban renewal over urban expansion, efficient public transport axes in close proximity to urban development areas, the (re-)introduction of environmental-friendly modes of transport, and a strong protection and development of green space to ensure the best possible quality of life for the City's residents. It is essential to understand that Vienna is both a federal state and a municipality (made of 23 districts) at once. As such, Vienna has more autonomy than the other Austrian cities, being endowed with the power to legislate. Compared to other Cities in Austria, this gives Vienna more power to implement and retain its social-ecological approach, which is still encapsulated in today's environmental policy discourse. Nevertheless, in the following sub-sections, we will show how the Fall of the Iron Curtain

in 1989, Austria's accession to the European Union in 1995, the introduction of sustainability in the political discourse in 2000, the City's turn towards energy-efficiency in 2006 and the smart turn in 2014 have altered Vienna's traditional environmentalness.

4.1. 1989–1999: From 'Local' Social-Ecological Approaches to the Introduction of 'Glocal' Environmental Policies

Vienna's problem-solving attitude was influenced by three main junctures between 1989 and 1999: the fall of the iron curtain in 1989, the City's membership in the Climate Alliance in 1991, and Austria's accession to the EU in 1995 (see Figure 1). The Department for Urban Planning problematized the fall of the iron curtain as a profoundly new geo-political situation, where population growth was to be expected [49]. Similarly, the City saw Austria's imminent membership in the European Union in 1995 engendering "intensified competitive conditions, also for Vienna" [49] (p. 1). Municipal policy-making aimed at developing Vienna as a regional centre in Central Europe and embraced moderate economic modernisation, while trying to compensate the negative social and ecological effects of economic development and population growth [50] (p. 138). Consequently, Vienna's "ecologically sensitive and health-oriented urban development" continued to support socially oriented urban renewal, and to ensure green space development and protection, and high-density and mixed-use housing on inner-city brownfields through zoning [49] (p. 55 ff). The expected population growth, however, led the City to develop new neighbourhoods at the city fringes. These developments still followed the City's ecological agenda that promoted dense urban structures in combination with good connectivity to low-carbon transport.

In addition to population growth, cars' emissions were perceived as one of the most pressing environmental problems in Vienna. Therefore, the so-called 1993 Traffic Concept proposed to further modernise the transport system towards low-carbon transport (public transport, cycling, walking), although without banning cars completely [51] (p. 3). Nevertheless, a parking-space management system was introduced for the inner-city districts in 1995, paving the way for a modal shift towards public transport—Vienna's key feature in transport policy. At the same time, the Department of Environmental Protection continued to focus on green space protection, water and waste management and emission reduction. Binding environmental quality standards were implemented to limit emissions from power plants, public transport infrastructure, and other communal and private infrastructure services [47]. Another main pillar became energy efficiency in district heating—investing in highly efficient cogeneration from waste incineration and industrial waste heat [52]. The social-democratic traits of these environmental measures aimed at ensuring the best environmental quality for the City's residents regardless of their social status.

These local social-ecological core values, however, were synchronized with a need for "international orientation" and "local action with global objectives" in environmental policies [49] (p. 61). One of the most critical moments in Vienna's turn towards global environmental objectives was Vienna's admission to the Climate Alliance in 1991. With its membership, Vienna committed itself to cut its CO₂ emissions by half until 2010 compared to 1987. However, drawing on preliminary studies, policy-makers argued that the goals were 'unrealistic', because Vienna already had very low CO₂ emissions compared to other cities and the population would not accept profound societal changes [53] (p. 10). Accordingly, the Department for Environmental Protection proposed to elaborate a climate protection program that would have "define[d] measures that [could have been] really implemented and then calculate[d] how much emissions [could have been] reduced" (Respondent 3). Consequentially, a tailor-made CO₂ trend prognosis (KliP Method) for Vienna was developed. This prognosis estimated the amount of CO₂ emissions with and without the planned measures by the climate program and set out an emission reduction by 26% until 2010. In 1996, the Department of Environmental Protection became responsible to establish the Viennese Climate Program (KliP) and together with two external consultant companies, interdepartmental working groups of the administration formulated 36 programmatic sets of "around 300 concrete policy measures" organised around energy, mobility and procurement (Respondent 3). Approved by the city council in 1999, the program focused on five

fields of action—faithful to the City’s social-ecological approach—that fell within the competences of the City: district heating and power generation, housing, businesses, mobility and municipal administration [53] (p. 10 ff).

As much as the introduction of the Viennese climate policy program highlighted a positive turn towards the problem solving of ‘glocal’ environmental problems, the KliP served as a “regional economic program that will consolidate Vienna as a business location and secure and create jobs” as well [53] (p. 31). This broad conception of the KliP as a “committed, sustainability-driven environmental program” signalled the City’s broader implementation of sustainability in the early 2000s and followed the Urban Planning’s call to focus on the interconnection between economy and ecology “to secure a sustainable, human, and environmentally friendly city” [49] (p. 61).

4.2. 2000–2006: *The Rolling out of Sustainability, Managerial Solutions and Rising European Influence*

The most important critical juncture in Vienna’s recent history occurred when “sustainable development became the new core principle” of Vienna’s strategic future orientation [50] (p. 155). The “Strategy Plan for Vienna” in 2000 problematized mainly Vienna’s new (economic) position in the upcoming EU eastward enlargement of 2004, and economic development became strategically as important as the social and environmental focus in Vienna’s broader policy discourse [54]. The stronger economic orientation can be traced back to the moment when the Social-Democratic Party formed a coalition with the conservative People’s Party. The People’s Party increasingly moulded the city’s economic policy when it assumed power of the planning department [50]. The inclusion of sustainability in the Strategy Plan, nevertheless, allowed integrating the social-ecological focus of the Social-Democrats, and the Plan received full support by the government and the administration [54]. Another factor that shaped the policy discourse towards sustainability was the wide change in the (environmental) governance approach of Vienna’s administration. The shift of the municipality “from a silo approach” to interdepartmental cooperation (Respondent 2) fostered the diffusion of sustainability across several departments within the administration. Additionally, for the first time in Vienna’s urban development policy, the formulation of the 2000 Strategy Plan foresaw the participation of outsourced public utility companies and scientific advisors, whereas the so-called “interested” public was invited to take part in the public “Wiener Stadtdialog” (Vienna City Dialogue) to publicly discuss the first draft of the strategy [50] (p. 156). The implementation of the strategy pursued ‘sustainable’ flagship projects in five strategic areas: 1) the new role of Vienna within the European Union; 2) economy and labour market; 3) science, education and culture; 4) natural and urban spaces, and 5) quality of life and environment [54] (p. 4 ff). Nevertheless, the economic rationale outweighed the social and ecological stance in the flagship projects. For instance, the strategic area ‘quality of life and environment’, with its focus on the development of inner centres and shopping streets, was privileged over green space development [54] (p. 27 ff).

Beside the rather symbolic nature of some flagship projects in the five areas, the City’s environmental agenda was streamlined in 2002, when the Coordination Office for Climate Protection was introduced in the Chief Executive Office and coordinated the ‘effective’ implementation of the Climate Protection Program. The Coordination Office was given special authorisations and the right to manage departments of different administrative groups to initiate, coordinate and supervise the implementation of measures in the fields of energy provision, efficiency of buildings, urban planning, transport, but also the ‘ecologisation’ of the administration itself. In doing so, the Coordination Office introduced management methods that strongly relied on yearly evaluation reports commissioned to external consultants, and policy reports to the City Council provided by the Coordination Office every two years, describing qualitatively the main measures implemented and the estimated development of emissions and economic added value [55]. Hence, through the Coordination Office and its managerial methods, Vienna’s “environmental policy became more professional, and (. . .) maybe even a bit more powerful” (Respondent 6).

The greater coordination in environmental policy-making, though, has not been able to iron out the environmental and economic ambiguities of the concept of sustainability in urban planning and transport policy. Even after the Social-Democratic regained power over the planning department in 2001, the inclusion of sustainable development in the 2005 Urban Development Plan and the updated Strategy Plan in 2004 gave the impression that environmental policies were supposed to support economic development. Both plans aimed at establishing the image of Vienna as an innovative, creative location with a high environmental and living quality, able to compete with other cities in the enlarged EU-25 [56,57]. The Urban Development Plan, for instance, stated that the development of green spaces is “an integral component of economic locational development” [57] (p. 55). This rather suggests a focus on economic development than environmental commitment. In fact, according to one of our interviewees, the administration of this period “tried to give green space less importance, because the overall interests of the city stood against it. (. . .) it was all about housing and economic development” (Respondent 8). However, a radical departure from environmental protection cannot be identified in urban planning. The urban planning discourse was rather shaped by another phase of population growth since 2000 (see Figure 1), which prompted the municipality to increase significantly the housing stock. Albeit urban planning policy aimed at limiting land use by privileging urban renewal and inner-city brownfield development [57] (p. 45), there was a significant loss of green space after 2005 by nearly 3% and around 1.000 ha (Table 1).

Increased traffic volume caused by population growth, suburbanisation and the City’s concentration of economic activities seemed to outgrow the City’s possibilities to tame traffic with the primacy of public transport and parking space management [55]. Whilst the public transport network has been extended, the modal split of the public transport rose and trips made by car decreased, emissions in the transport sector kept rising (Table 3). According to the KliP evaluation reports, this ambiguity can be primarily explained by two drivers. First, the allocation of emissions appears to be biased as accounted transport emissions for Vienna are based on the place where fuel is bought rather than where transport emissions are emitted. Secondly, increased mobility and the trend to bigger and more powerful cars of the Viennese population. These factors shaped the City’s individual and commercial transport policy, which embraced technical innovations, such as more efficient combustion engines and electric vehicles [58]. The reliance on technical innovations can be also traced back to the lack of co-ordination efforts at the regional level, especially “the border of Vienna and Lower Austria [was] a major hindrance” (Respondent 2). Although a coordination platform was introduced in the form of the ‘Planungsgemeinschaft Ost (PGO)’—comprising the federal states of Vienna, Lower Austria and Burgenland—in 1978, the non-binding character of the PGO was not able to “efficiently cope with today’s environmental challenges” (Respondent 7).

While the environmental problem-solving attitude in urban planning and transport was shaped by local challenges, energy policy was increasingly synchronized with policy actions at upper-tier levels. Austria’s accession to the EU prompted the City of Vienna to transform its public utility companies into private companies in 1999. Although Vienna retained 100% ownership, the liberalisation of the energy markets in 2003 exposed Vienna’s semi-public energy providers to market competition and limited the City’s abilities to directly influence its energy provider [55]. According to climate program evaluations, the city only retained the decision-making over the construction of new power plants. Even further, with the introduction of the European emission trading system in 2005, the European level gained more power in curbing emissions from energy providers. Nevertheless, Vienna’s semi-public utility company successfully continued the City’s social-ecological tradition in district heating, local power plants became more energy-efficient and co-generation was used increasingly to power district heating for large-scale social housing. Altogether, increased fuel utilization rates of Viennese power plants and an increasingly substantial district heating network are the result of this successful policy (see Table 3).

With the implementation of co-generation in district heating, Vienna anticipated the EU directives on the promotion of co-generation (2004/8/EC, repealed by 2012/27/EU), whilst a stronger orientation towards the use of renewables was initiated by the EU directive on promoting electricity produced

from renewables (2001/77/EC, repealed by 2009/28/EC). Renewables are increasingly considered crucial to cope with climate change by the City and evaluation reports show that the Viennese efforts to erect windmills, photovoltaic and solar panels and hydro-electrical power plants in the City led to rising shares of renewable in energy use (Table 3). EU and national policies brought energy-efficient solutions in housing into Vienna's policy discourse, although initially policy measures were limited to thermal retrofits. In 2000, the City introduced non-repayable subsidies for thermal retrofits of the building shell. These subsidies have been mostly applied to large-scale social housing estates highlighting once more Vienna's social-ecological core values. As Table 3 shows, thermal retrofits gained importance over other forms of renovations and successfully contributed to decreasing emissions in the building sector since 1995. The directive on energy performance of buildings (2002/91/EC, repealed by 2010/31/EU) enhanced the local policy discourse on energy-efficiency in housing, but federalism slowed down the introduction of stricter thermal building standards, since Vienna waited to amend its building code until the directive was incorporated into national law.

4.3. 2006–2011: Consolidation of Energy Efficiency, Technological Fixes and Economic Development

Another critical juncture that marks Vienna's problem-solving attitude corresponds with the approval of the council's Energy-Efficiency Program in 2006, which consolidated Vienna's orientation towards energy efficiency. The focus of the 2020 climate and energy package on energy-efficient measures and renewables prompted Vienna to include energy-efficient measures to limit energy consumption more prominently. The Energy-Efficiency Program, but also the updated Climate Protection Program in 2010 (KliP II), featured more prominently Vienna's commitment to stricter efficiency standards in housing. Its implementation, however, required an infringement procedure of the EU directive on the energy performance of buildings (2002/91/EC, repealed by 2010/31/EU) to overcome synchronisation problems in climate policy between Vienna and the national level. However, based on an Article 15a Agreement, that allows by constitution a legal agreement between the federal government and the federal states, stricter energy efficiency standards were introduced into local building codes in 2009. The directives on energy end-use efficiency and energy services (2006/32/EC, repealed by 2012/27/EU), and eco-design (2009/125/EC changed in 2012) [59] (p. 8 ff) prompted the City to factor in the efficiency of electrical appliances and lighting into their main strategies.

At the end of the 2000s, Vienna increased its efforts to brand the city's social-ecological efforts. Increasingly, European city networks and initiatives, such as Eurocities, were considered by the administration to be vital in highlighting Vienna's successful commitment to environmental protection [47]. For instance, when Vienna joined the Covenants of Mayors for climate and energy in 2012, the City promoted its green social housing scheme as part of the membership process. Nevertheless, this branding effort sought to influence EU policy-making with the purpose of maintaining the City's capability to pursue its social-ecological core values. In particular, the inclusion of the "subsidiarity principle or the protection of services of general interests" was of major importance to pursue the City's core values (Respondent 8). By way of contrast, the branding of the City's ecological and social qualities was increasingly emphasized by the City to strengthen Vienna's profile as an international business location and research hub in the international economic competition amongst cities. In particular, the municipality used the rankings published by Mercer since 2009 to brand Vienna as the most liveable city, thanks to its high-quality infrastructure and affordable housing. Hence, the notion of sustainable development, with a strong emphasis on economic development, continued to shape the City's problem-solving attitude by the end of the 2000s as well as the beginning of the following decade.

Table 3. Selected evaluation indicators 1990–2015.

Sector	Indicator	1990	1995	2000	2005	2010	2015	Trend Since 1990	Trend Since 2005
Emissions	According to the Austrian emissions inventory (5 year means of t CO ₂ Equivalents per Capita)	5.6	5.6	5.6	5.9	5.6	4.8	-	-
	According to KlIP method (5 year mean of t CO ₂ Equivalents per Capita)	3.8	3.8	3.5	3.3	3.0	2.7	-	-
	Share of emissions from energy supply	28.3	29.2	27.1	24.8	23.1	21.6	-	-
	Share of emission from transport	26.7	28.3	30.5	32.5	32.4	33.6	+	+
	Share of emissions from buildings	28.3	29.2	27.1	24.8	23.1	21.6	-	-
Energy	Annual final energy use (GWh)	27,977	32,399	33,545	39,450	39,628	37,327	+	-
	Annual final energy use (kWh/capita)	18,743	21,002	21,663	24,165	23,448	20,768	+	-
	Share of Renewables (%)	n.a.	n.a.	n.a.	5.8	10.3	11.7	+	+
	Fuel utilization rate of Viennese power plants (%)	n.a.	60.4	66.8	68.4	76.4	78.2	+	+
Transport	Length of District Heating Network (km)	n.a.	n.a.	n.a.	1047	1168	1219	+	+
	Public Transport Network (5 year mean of km)	n.a.	951	925	924	938	1060	+	+
	Public Transport Metro (5 year mean of km)	n.a.	53	58	61	69	77	+	+
	Share of Public Transport in Modal Split (%)	n.a.	29 ^a	33 ^b	34 ^c	36	39	+	+
	Share of Car Travels in Modal Split (%)	n.a.	40	36	35	31	27	-	-
	Cycling Network (km)	n.a.	n.a.	835	1009	1174	1298	+	+
Buildings	Electric cars	n.a.	n.a.	n.a.	22	1289	4588	+	+
	Apartments of subsidized thermal retrofits	n.a.	n.a.	23,830	51,772	85,660	105,200	+	+
	Share of thermal retrofits to all renovations	n.a.	n.a.	38	60	83	92	+	+
Land use *	Building land (%)	32.3	32.9	33.3	33.3	35.4	35.8	+	+
	Green Space (%)	49.4	48.6	48.3	48.2	45.6	45.0	-	-

^a Data from 1993; ^b from 1999; ^c from 2003; Source where not marked: Stadt Wien—data.wien.gv.at; * Statistical Yearbooks of the City of Vienna.

4.4. 2011–2019: The “Smart” Turn: the Pursue of Social Ecological Values by Boosting Urban Economic Development

Another critical juncture that fostered the integration of economic development with the City’s social and ecological core values can be detected when the Climate and Energy Fund supported the “smart city Wien” project in 2011. The smart city project built upon three stakeholder fora and developed the “Vision 2050, Roadmap for 2020 and beyond, and the Action Plan 2012-15” to turn Vienna into a Smart City [60] (p. 5). However, the inclusion of project partners selected from universities and tech-companies indicated the City’s policy-making shift towards a greater involvement of public utility companies, (hi-tech) businesses and research institutions. After the successful completion of the project, six additional stakeholder fora were organised, targeting mostly representatives from the municipality, engineers and entrepreneurs. For instance, the fifth stakeholder forum, called “Innovation through smart projects”, introduced subsidies for climate-friendly technologies by the municipality [61]. However, in contrast to the stakeholder fora’s main interest in technology and innovation as a vehicle to enhance Vienna’s economic development, the 2014 Smart City Framework Strategy merged the technological focus with the Administration’s long-standing commitment to its social-ecological values.

The strategy discursively privileged quality of life over technological fixes, with the former becoming the leitmotif of the Strategy’s narrative: “It is thus the key goal for 2050 of Smart City Wien to offer optimum quality of life, combined with highest possible resource preservation, for all citizens. This can be achieved through comprehensive innovations” [62] (p. 16). The narrative of sustainable development still framed Vienna’s smart city approach, defined by the former mayor as a “comprehensive artwork of urban ecology” (Respondent 8). Consequently, Vienna’s commitment to resource preservation has continued to rely on the traditional social-ecological values which centre around sustainable land-use, a dense public transport network, a wide supply of affordable housing, high-quality public-owned utilities, and protection of green space (Table 3). Vienna’s persistent orientation towards its glocal embeddedness is underscored by the prominent orientation towards achieving the 2020 European Climate and Energy objectives, and, at the time of writing, the proposed 2030 Objectives. To fulfil the European objectives, the strategy functioned, on the one hand, as the City’s umbrella strategy and as co-ordination tool for current sectoral strategies and programs—such as the Climate Protection Program, the Urban Development Plan and the Energy-efficiency program to be aligned. In line with the previous strategies, the 2014 Smart City Framework Strategy retained a managerial approach. The strategy was conceived as a guideline for the City’s administration and in fact, the Smart City strategy “gains its special strength by the support of all administrative groups, although still organised as silos”. For all stakeholders, including public utility companies, (hi-tech) businesses and research, the Smart City Wien Agency serves as “the central co-ordination point” [62] (p. 88). The agency aims at fostering innovations and technologies that contribute to local economic sustainability and to Vienna’s image as a science and business location.

In doing so, the City drew increasingly on research and technology funding and implemented several large-scale, trans-disciplinary, co-funded ‘smart’ projects under the FP7, Horizon 2020 and national funding schemes. With the help of these large ‘innovation’ projects—such as ‘Smarter Together’ and ‘EU-GUGLE’ to name the most prominent—the implementation of Vienna’s core environmental policy measures, such as connecting households to district heating, social sensitive retrofitting, were implemented, and new technological and social innovations were tested. However, these projects were considered as crucial means to achieve the objective of the Strategy and all relevant stakeholders—mainly private businesses, research, NGOs and citizens—were included. Nevertheless, the City of Vienna has extended the branding of its social and environmental qualities, increasingly boosted by ‘independent’ rankings and awards that go beyond the Quality of Living ranking by Mercer, such as the Global Liveability Index by Economist [8–11].

5. Discussion and Conclusions

In this article, Vienna's climate policy evolution over the last thirty years has been examined. The analysis identified the critical junctures of such trajectory, characterised by stark shifts in the municipal political narrative and policy approach. Additionally, the article has investigated the structural institutional changes and the inter-level game that have shaped Vienna's urban climate policy.

The findings show that the foundations of the municipality's green mindset were laid in 1979—when the Department for Environmental protection was established. The City's ecological ethos, which pivots around the notion of quality of life, was strengthened by the turn in Vienna's urban planning towards social and environmental aspects in 1984. However, changes in the governance structure, with multiple levels and actors involved in the policy-making, coupled with geo-political and socio-demographic transformations, led to the reinterpretation of the 'traditional' environmental outlook through the adoption of an entrepreneurial and techno-managerial policy style. This shift to an "entrepreneurial city" has been documented by other authors [63–65]. In particular, Astleithner and Hamedinger [64] (p. 68) found how in the 1990s the social-democratic administration tried to mould Vienna on the "entrepreneurial city" model, bringing in the core elements of New Public Management, such as collaborations with private actors, greater downscaling of competencies and performance assessment mechanisms. After the first climate policy evaluation results around 2007, the municipality adopted a stronger techno-managerial policy approach to address environmental problems, especially with regard to energy-efficiency and car traffic. By hailing the salvific capacity of technological fixes, Vienna's "problem-solving attitude" [23] (p. 48)—at least, in the realm of climate policy—has become post-political, with a growing reliance on experts and measurable goals.

Nevertheless, the City's persistent focus on environmental protection and its strong commitment to environmentally sensitive and health-oriented urban development since the 1980s suggest that Vienna's environment-friendly profile does not appear to be a political strategy used to maintain influence—as some UPE scholars would have it [14]. Actually, the relevance of environmental policy, which is also encapsulated in urban development, hints at how Vienna has been able to compound the nature/city antithetic dyad. Being the stronghold of the social-democratic Party for nearly a century, it is difficult to discern the influence exerted by different parties on the environmental discourse. However, the coalition formed by the social-democratic and conservative parties between 1996 and 2001 represents the general shift in the City's environmental political discourse at the beginning of 2000, characterised by the introduction of the concept of sustainable development. Along with the environment, the social protection discourse has remained embedded in the City's strategy—evident, for example, in the persistence of green communal policy and social housing. The corporatist model and Vienna's path-dependent environmental and social mind-set became increasingly tied in with economic development strategies. This development led to the current Smart City Framework Strategy that bundles environmental strategies and programs, e.g., the Climate Protection Program and the Urban Development Plan, with economic strategies, such as the 'Innovative Vienna 2020' Strategy, which focus on research, technology and innovation. Hence, the "problem-solving" attitude of the City of Vienna couples a seemingly genuine environmental and social concern with economic opportunism. Indeed, the City, while remaining faithful to its long-standing social-democratic tradition of public intervention in crucial policy sectors, has embraced the capitalist logic of economic growth as the only viable option to subsidise public services. In line with the observation of Novy and Hammer [65] (p. 213), it can be argued that the Viennese social-democratic regime has not remained intact over time; rather, it has shifted towards socially liberal principles, primarily "controlled modernization", which privileges private over public economic activity.

As with the multilevel interplay, our findings detect a lack of coordination and de-synchronised developments between the national/federal and local levels. With respect to climate protection, the coordination between municipal departments is mainly pursued by the Executive Office for the Coordination of Climate Protection, which mostly targets administration and public utility companies. The lack of coordination among levels appears to be a long-standing flaw of Vienna's

administrative functioning. In this respect, Astleithner and Hamedinger's study [64] (p. 69) shows that, in the early 2000s, the City of Vienna was already affected by a "tendency towards a lack of co-ordination and communication across departments", the latter resembling "organizations within themselves, possessing their own corporate identity and self-understanding". The findings of our study suggest that this tendency has weakened, with a greater reliance on interdepartmental cooperation and on networks of experts, especially with the initiation of the smart turn in 2011. However, the administrative architecture is still driven by a silo organisation, as witnessed by projects that, although often inter-departmental, are still subsidised by departmental funds. In this respect, the organisation of the City of Vienna is still vertically structured, with a top-down decision-making process and little involvement of non-public actors [64,65]. Businesses and research institutions are part of the local governance arrangement, while civil society is not fully and properly engaged. As such, the governance of environmental and climate policy appears to be elitist: civil society is seen as the recipient of high-quality services rather than a crucial partner in policy-making.

Despite the inter-level cross-links have changed tremendously over the period considered, the vertical decision-making style still seems to be the norm [64]. In effect, the wide use of laws and regulations at the national level indicates a rather top-down structure. Similarly, local action appears to be hindered by coordination issues between the regional, federal and municipal levels. Notwithstanding, our findings detect more ambitious commitments to climate targets and policies at municipal level than at the upper levels of authority. The case of Vienna, a city with a marked eco-friendly profile, reinforces the argument—recalled in the Introduction to this Special Issue—whereby cities are often forerunners in climate adaptation policy, whereas the transformative capacity of cities is likely to be restrained by vertical governing structures. Due to Vienna's double role as a municipality and a federal state, the City has retained significant autonomy to pursue its own ecological path, implementing climate policy measures at its own speed. Nevertheless, cross-links with upper-tier levels accelerated Vienna's path towards technological solutions. Our findings suggest, on the one hand, that the implementation of European Directives supported the city's focus on technological fixes in the energy and housing sector. On the other hand, stronger links have been developed in relation to funds (especially research funding) from national and European levels due to fiscal consolidation policies. One example is the use of Smart City subsidies from the Climate and Energy Fund, employed by the City of Vienna to finance climate-friendly projects. However, the implementation of these projects tends to abide by the rules of the upper tiers of government, which in turn implies the acceptance of their focus on technological development and the marketisation of climate-friendly products.

Ultimately, this article has shown how Vienna's green bent is the result of a more than 30-year policy trajectory, characterised by both path-dependency and significant transformations. These have shaped the City's climate policy that, while leaning towards a techno-managerial (and post-political) policy style, still retains its green 'spirit'. This has been made possible by the great deal of autonomy enjoyed by the City. Despite a difficult relation with the federal levels, its federal-state status has enabled Vienna to develop its own environmental-friendly profile, both internationally and within the urban boundaries. Since this article drew on a single case study, further research should undertake a comparative analysis of climate policy in multiple cities. This would enable us to shed light on whether they experienced similar/dissimilar critical junctures produced by converging/diverging political and policy drifts, and layering and cross-level interactions.

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