MS2 Part 1

Analysis of climate governance structures in pilot cities and policy needs

Milestone overview report 2

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Introduction

The aim of this second part of the Milestone (MS) 2 report is to provide an overview of climate governance structures in the three pilot cities of Zurich, Munich and Paris and share the preliminary findings on the first phase of stakeholder interviews.

The overall objective of Task 1.2 (Science-Technology Policy Governance and Emissions Data - Information and policy needs of the pilot cities) is to investigate whether decision makers in the cities of Zurich, Munich and Paris have previously used emissions data to inform decisions on climate action and if so, how. The research will also incorporate the question of how new emissions data could improve this process. The outputs of Task 1.2 will serve as input for Task 1.4, the goal of which is to develop prototypes for emissions monitoring services, as well as for Work Packages 2 (Modeling), 3 (Observations), 5 (Communication), and 6 (Integration into Research Infrastructures).

As a first step, this report consolidates information shared in MS1 about the climate governance structures in the three pilot cities. Chapter 2 begins with a brief introduction to the concept of multi-level governance and how it applies to climate governance in the three pilot cities. Next, Chapter 3 presents the research design and methods. In Chapter 4, the horizontal climate governance structure of each city is reviewed. These climate governance structures are then compared to each other. Chapter 5 introduces the insights of the first phase of stakeholder interviews, with a special focus on collaborations in local climate governance. Chapter 6 concludes the report, outlining the main findings, some limitations, and an outlook for future research.

Theoretical framework

Air pollution and climate policymaking at the urban level in Europe occurs at different levels of governance – local, national, and international. The concept of multi-level governance (MLG) examines how different actors, institutions, and processes come together to formulate and implement regulatory measures, policies and programs.

Introduction to multi-level governance

Governance refers to the processes by which policymaking and policy implementation occur (Mayntz, 1998; Mayntz & Scharpf, 1995; Rosenau & Czempiel, 1992). At the end of the 1990s and the beginning of the 2000s, MLG approaches became increasingly well-developed to address research targeting Europe which neither fit into traditional federal nor national policy making frameworks. In the meantime, the approach has proven useful in relation to understanding policy making not only in the supranational European context but also in relation to other systems. Two of our cases (Munich and Paris) are in Member States of the European Union (EU). The third case, Zürich, is in Switzerland, which although not a member of the EU closely coordinates its climate policy with that of the EU.

The MLG approach draws on theoretical insights found in studies of supranationalism, federalism and European studies, and links them to the concept of "governance". The basic concept of MLG involves a shift from a traditional and centralized governance system to a horizontal and vertical system of multiple stakeholders (OECD, 2017a). Given our case studies – two of which fall within the EU's multi-

level governance system, and Zürich, which collaborates with the EU, it is critical that we observe both the vertical and horizontal dimensions of MLG and the learning that can occur across policy arenas.

Studies of MLG governance systems and approaches go beyond traditional state-centered analyses that focus primarily or exclusively on the role of governments in decision making processes to include the multiple actors who influence agenda setting and policy implementation. These include actors in politics, government bureaucracies, the private-sector, the scientific community, and civil-society as well as international actors, including organizations like the United Nations and the World Bank, transnational corporations, and international non-governmental organizations.

Within the supranational European context, it is especially important to understand the interactions among actors and institutions operating at the European, national and sub-national levels. Governance within the European Union is structured both by formal rules and processes established by constitutions and laws and non-constitutional, "soft" and informal forms of interaction and influence (Benz & Eberlein, 1999; Börzel & Risse, 2004; Knill & Lenschow, 2000; Schreurs 2002). Multi-level governance involves institutional, territorial, and public management dimensions. In other words, it is not just a question of at which level policy is being made, but which actors are involved, and which processes are being pursued (OECD, 2017b).

Bache and Flinders (2004) point out that as policy issues become more complex, as is the case with climate change, they often take on MLG dimensions. The growing complexity of climate governance is evidenced by the many actors, institutions, scientific fields, and sectors involved. This makes it difficult to identify decision-making levels and bodies due to the overlapping of responsibilities and the increasing interdependencies and interconnections of different political-territorial levels.

Multi-level governance has vertical, horizontal, and cross-cutting dimensions to it. Vertical governance refers to the interactions among different levels of government, from the supranational to the national, state or prefectural, and local levels. Vertical governance can be top-down or bottom-up. National governments may thus set policies that must be implemented by lower levels of government. Alternatively, lower levels of government or non-governmental actors at the local level may develop policy ideas that influence policymaking at higher levels of government. The forms that vertical governance take vary somewhat among states depending on whether they are centralized states, as is the case with France, or federal states as is the case with Germany and Switzerland. Formally defined competencies may thus not always lie with the same level of government. Over time, there may also be some variation as a central government (as in France) may choose to delegate certain responsibilities to lower levels of government, or in federal systems, different government levels may negotiate changes in where and how decisions are to be taken.

Horizontal governance, in contrast, refers to the collaboration among actors at similar levels – for example, across ministries, within a city, with stakeholders, or also across cities, such as through city networks or scientific collaborations. Jurisdictional competencies can strongly influence whether vertical or horizontal governance structures predominate albeit often both are in play.

The extent to which and the ways in which not only policy makers, bureaucrats, and the courts, but also businesses, experts, citizens groups, and the public at large are integrated into decision making processes, also varies substantially. This has much to do with political culture and institutional designs.

As EU climate policies and those of the members of the European Free Trade Agreement (EFTA), including Switzerland, are closely aligned, this research project affords the opportunity to examine
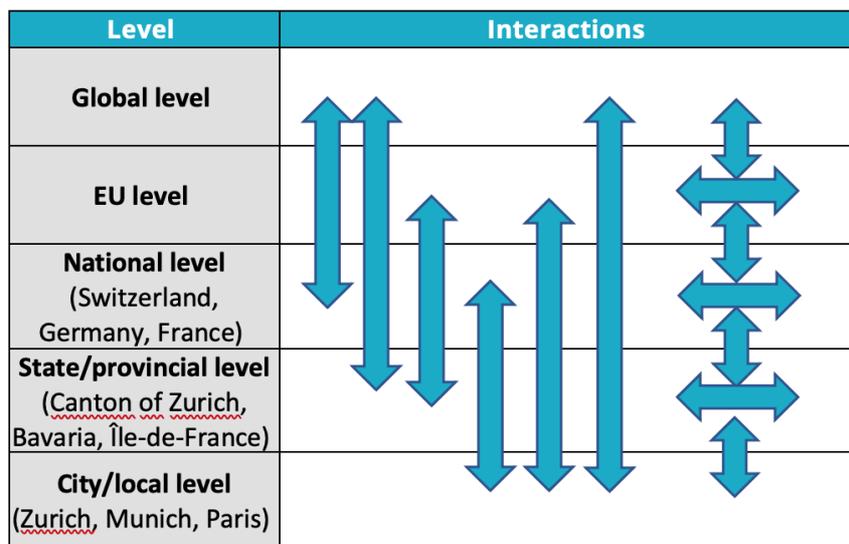
similarities and differences in climate policy making between two cities within the EU, and one within the EFTA.

Research Design

The research design of the multi-level policy analysis of climate governance carried out here is sketched in Figure 1. In this report, the local level within the European Union's MLG structure and the coordination and exchange that occurs with other entities outside of the EU (in this case, the EFTA region and more specifically Zürich in Switzerland) are the main focus of analysis.

A simplified depiction of the many ways in which different levels of government may interact with each other both horizontally and vertically is presented in Figure 1 below. (Note that although Switzerland is not a Member State of the EU, in the climate area, it is nevertheless strongly influenced by EU decisions and may itself also at times exert influence on EU policy decisions. Horizontal exchanges are thus, particularly important here).

Level	Interactions
Global level	
EU level	
National level (Switzerland, Germany, France)	
State/provincial level (Canton of Zurich, Bavaria, Île-de-France)	
City/local level (Zurich, Munich, Paris)	

Figure 1:   **Multi-level governance: possible horizontal and vertical interactions (Source: Adapted by the authors from Jänicke, 2015, p. 5789).**

Our focus is on cities within Europe. European cities play a crucial role in climate governance. Europe is a highly urbanized continent with relatively few megacities and a large number of medium to large cities. A growing number of European cities are striving to become climate leaders. We look at the governance structures of three such cities: Zurich, Munich and Paris. Each of these cities is faced with the challenge of sharply reducing harmful pollutants and greenhouse gas (GHG) emissions in the matter of just a few short years. Paris, the largest of our three cities, plans to reach carbon neutrality by 2050, Zurich aims for climate neutrality by 2040, and Munich has set a target to be net-zero by 2035. International and supranational frameworks have shown to significantly impact climate governance in the pilot cities,

serving as a guidance for policy priorities (see Table 1 for a listing of relevant frameworks in the three pilot cities). To understand how these cities aim to achieve their targets, the report outlines their governance structures and provides initial findings.

Table 1: **International/supranational frameworks affecting climate governance in pilot cities**

	Zurich	Munich	Paris
Paris Agreement	✓	✓	✓
Agenda 2030 for Sustainable Development with 17 Sustainable Development Goals (SDGs)	✓	✓	✓
European Green Deal	x	✓	✓
European Climate Law	x	✓	✓
EU Mission: 100 climate-neutral and smart cities	x	✓	✓

Methods and data sources

The analysis is based both on extensive secondary material and literature as well as empirical primary material obtained through interviews and field visits. To identify relevant studies and content an internet search was conducted. Google was used to search for available studies, reports and cities' official websites. This was done using keyword combinations that address climate governance in France, Germany, and Switzerland, as well as more specifically in Munich, Paris, and Zürich. In addition, relevant material at the European and global levels was consulted.

The secondary material and document analysis draws on the cities' official websites, reports prepared by international organizations such as Climate Chance[1], the German Corporation for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ), the Organization for Economic Cooperation and Development (OECD), and the European Union (EU), and relevant academic publications accessed through the databases e. g. ScienceDirect, SpringerLink, and Taylor & Francis Online.

All information was analyzed in a qualitative manner. Since very few political science studies have been published on the governance processes and science-policy interfaces discussed in this report, it was necessary to make extensive use of original documents. The authors conducted qualitative content analysis of official and unofficial drafts of laws and directives, plenary and session minutes, reports, conferences, statements, and press releases. In addition, non-public documents and sources were included in the analysis; these were provided by interview partners and contributed to the clarification of policy processes.

To further support the analysis, the report draws on findings from Jessica Dolan's master thesis which was conducted in collaboration with the PAUL project and supervised by Professor Dr. Miranda Schreurs

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[1] https://www.climate-chance.org/en/

with further mentorship by Ana Maria Isidoro Losada. Dolan's thesis enriched our research and analyses. It involved stakeholder interviews, field visits, and participant observation and explored the complex interactions taking place among and between different stakeholders in Munich and Zurich.

The document analysis, literature review, and evaluation of existing policy analyses (see Chapter 4) were supplemented by guided interviews with key actors (see Chapter 5).

Interview Methodology

Task 1.2 includes the execution of interviews with key stakeholders in Munich, Zurich, and Paris. To ensure a comprehensive representation, invitations were extended to a diverse range of stakeholders that have shown to have impact in the climate governance of the three pilot cities, including those affiliated with city administration, civil society, private business, and science. The selection of these stakeholders was accomplished through different means, such as visiting the official websites of the cities, analyzing reports published by the cities and private collaborations, conducting targeted Google searches, exploring LinkedIn profiles, and reviewing climate strategy documents. Additionally, the snowball sampling technique was used, where participants were asked for recommendations at the conclusion of each interview (Dolan, 2023). These interviews were conducted by project team members Barbara Dias Carneiro and Jessica Dolan and supervised by Ana Maria Isidoro Losada and Prof. Schreurs.

The first phase of stakeholder interviews was conducted in Zurich and Munich, and currently ongoing in Paris (see Appendix B for further details). A total of 73 invitations were sent: 26 to stakeholders in Munich, 26 to stakeholders in Zurich, and 21 to stakeholders in Paris. The majority of invitations were sent via email, while some were sent through LinkedIn. After receiving a combination of positive, negative, and non-responses, we conducted 15 semi-structured interviews in total: 7 with Munich stakeholders and 7 with Zurich stakeholders. Given logistical constraints and the interviewees' expressed preference, the majority of these interviews were conducted online via Zoom. All interviews were conducted in English and ranged from 30 minutes to one hour in duration. A comprehensive list of interviews along with their specific details can be found in Appendix II.

The interviews were carried out using a semi-structured format, which allowed for a flexible exploration of specific topics while also enabling consistent questioning across similar stakeholder groups (see Appendix I). Although conducted in English, interviewees were also encouraged to freely express themselves and use terms in their native languages whenever necessary. They were asked to share their professional and personal experiences related to climate governance within their respective cities. The semi-structured open interview questions included a range of topics, including general climate governance questions, stakeholder-specific questions, and questions regarding personal experiences. The interview format consisted of different sets of questions tailored to address the expertise of each stakeholder group.

The interviews aim to gain insights into the vertical and horizontal climate governance structure of each city by exploring the challenges and aspects of the cities' interactions with higher levels of government and various stakeholder groups, including civil society, business, and science.

Local climate governance in pilot cities

Zurich

Switzerland has taken significant steps to address climate change through strategic plans and legislation. The Federal Council introduced the Swiss National Adaptation Strategy in 2014 to achieve net-zero emissions by 2050, focusing on key sectors like water management, agriculture, and energy. The Long Term Climate Strategy aims to reach net-zero GHG emissions by 2050, aligned with the Paris Agreement and the EU's climate neutrality goal. The Federal Act on the Reduction of Greenhouse Gas Emissions (CO_2 Act) mandates emission reductions, and a revised version is set to halve GHG emissions by 2030.

The City of Zurich adopted a new climate protection target on May 15, 2022. As part of the new proposal, the city aims to become climate neutral by 2040 and have a net-zero administration by 2035 (Stadt Zürich, 2022c). This target is more ambitious than the federal government's 2050 net-zero plan and matches the target of the Canton of Zurich. For the first time, the Zurich electorate approved a reduction target for GHG emissions that are emitted outside the city boundaries but are, to some extent, caused by citizens of Zurich. These so-called indirect, or grey, emissions stem from mobility outside the city, the procurement of food, textiles and building materials, and the energy supply chain. The goal is to reduce indirect emissions by 30% compared to 1990, by focusing on measures related to the circular economy and sustainable procurement (Stadt Zürich, 2022c).

For further information on the analysis of Switzerland's vertical governance, readers are encouraged to consult Milestone report 1.2.

Horizontal Governance and the Role of Various Stakeholders in Zurich

The city of Zurich's first climate goal is to become a Climate Neutral City by reducing GHG emissions to net-zero by 2040 and indirect GHG emissions by 30% by 2040, compared to 1990 (Stadt Zürich, 2022b). Within this goal, the city of Zurich implements specific strategies to tackle the issue, including a New Climate Protection Target which aims for the city administration to become net-zero by 2035 (Stadt Zürich, 2022b). Other strategies covered in the city's Climate Neutral City include a Food Strategy, aimed to analyze the production chain outside the city's borders and promote environmentally friendly nutrition options, and an Energy Master Plan, aimed to provide resource-efficient energy supplies (Stadt Zürich, 2022b).

The Energy Officer (*Energiebeauftragte*) plays an important role in the integration of Zurich's cross-departmental Energy Master Plan. Updated every four years, this plan sets the municipal energy policy agenda on measurements and strategies that should be applied within departments (Stadt Zürich, 2021a*).*

City networks play an important role in city management in Switzerland. The city of Zürich collaborates with different organizations and private companies. As part of their Eco-Compass project (*Öko-Kompass*), the city of Zurich is working through the Clean Agency Switzerland AG to provide consulting services for small and medium businesses regarding environmental measurements (Stadt Zürich, 2021c). The service, free of charge, provides local companies with recommendations for a cost-efficient sustainable transition in relation to energy-efficiency, mobility, resources and corporate management (Stadt Zürich,

2021b). This service is in partnership with the companies Integrale Planung GmbH, Sinnform AG and the Myclimate foundation.

As a direct democracy, Swiss citizens vote on climate proposals. The city of Zurich implements a Climate Forum (*Klimaforum*) to involve multiple stakeholders in the development and discussion of climate protection programs for the city. In 2020, for example, around 100 people from different organizations and businesses joined the forum to discuss climate-related topics and possibilities for the city (Stadt Zürich, 2022d).

Within the Health and Environment department (*Gesundheits- und Umweltdepartement,* UGZ), the city of Zurich has a number of funding initiatives to tackle climate change. Together with the UGZ, they supported 30 projects in 2020, in the field of environment and sustainability, with CHF 180,000 (Stadt Zürich, 2022a). One of these exemplary projects is the Climate Talks (*KlimaGespräche*). This initiative is aimed at citizens looking to make personal efforts toward their ecological footprint and CO_2 efficiency by introducing them to an educational method on how to achieve such (Stadt Zürich, 2022e). Another funded project is the Vegetable Academy (*GemüseAckerdemie*), with an endorsement of 12,000 CHF in 2020 from the city. This project assists schools in Zurich in building their own vegetable gardens and integrating those learnings in classrooms (Stadt Zürich, 2022e).

Zurich participates in various transnational city networks related to climate action. It is a member of ICLEI – Local Governments for Sustainability, Climate Alliance[2], and the Covenant of Mayors.

Munich

In 2019, Germany introduced its first national climate law (Bundes-Klimaschutzgesetz, 2019), aiming for climate neutrality by 2050. This was revised forward to 2045 in reaction to a ruling of the Constitutional Court in April 2021. Today, 2023, the climate law is currently going through discussions of a possible reform to shift the focus away from annual emissions reduction targets for each sector to a cross-sectoral view, focusing on 2030 instead of 2045 (Clean Energy Wire, 2023). Germany's Federal Ministry for Economic Affair and Climate Protection (BMWK), led by Robert Habeck, officially initiated a departmental vote on June 2023 on the draft of the Climate Protection Act and the Climate Protection Program (KSP) (Bundesministerium für Wirtschaft und Klimaschutz, 2023). The package includes programs to set the nation's efforts towards its national and European climate goals, including a reduction of greenhouse gas emissions by 65% by 2030 (BMWB, 2023). Negotiations are expected to happen starting at the end of summer, 2023.

Munich aims to reach climate neutrality by 2035, with the city administration aiming to reach this goal for itself already in 2030 (Landeshauptstadt München, 2022a). This is reminiscent of other cases where cities have set more ambitious climate targets than the EU and national governments and is not unique to Germany (Kern, 2018).

For further information on the analysis of Germany's vertical governance, readers are encouraged to consult Milestone report 1.2.

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[2] https://www.climatealliance.org/en/home.html

Horizontal Governance and the Role of Various Stakeholders in Munich

Since 2019, the Department of Climate and Environmental Protection (*Referat für Klima- und Umweltschutz,* RKU) has led the city of Munich in the areas of climate and environmental protection, climate adaptation and sustainability (Landeshauptstadt München, 2021). Under the leadership of the current Climate and Environmental Protection Officer (*Referentin für Klima- und Umweltschutz*), the department prepares climate action plans for the city of Munich and works closely with other departments and organizations. In order to extend the reach of the Integrated Action Program for climate protection in Munich (*Integriertes Handlungsprogramm Klimaschutz in München*, IHKM), ten climate protection managers (*Klimaschutz-Manager*innen*) work full-time in other city departments such as the Department for Urban Planning and Building Regulations (*Referat für Stadtplanung und Bauordnung*) and the Department of Labor and Economy (*Referat für Arbeit und Wirtschaft*).

Like most major cities, Munich is part of several transnational municipal climate networks, including Energy Cities, the Covenant of Majors, and the Climate Alliance. The focus of these networks is mainly on a shared commitment to climate protection as well as the sharing of knowledge and best practices. In a study by Busch et al. (2018), transnational city networks were found to have a significant influence on local climate governance in Germany by raising public awareness of the issue, institutionalizing climate policies, and facilitating direct exchange between cities. Munich is also a member of the Association of German cities (Deutscher Städtetag), an organization which represents Germany's cities at the national and EU level.

External knowledge actors are also important players in Munich's climate governance structure. Prominent scientific institutions such as the Institute for Applied Ecology (*Öko-Institut*) and the Research Institute for Energy Economics (*Forschungsstelle für Energiewirtschaft*, FfE) are instrumental in contributing to reports on climate neutrality and city action plans. For example, the two institutes recently collaborated on a report about possible solutions for climate-neutral heat supply in Munich (FfE GmbH & Öko-Institut e. V., 2021).

Achieving climate-neutral energy supply has been a key objective for the city of Munich for quite some time. A key player in this is the Stadtwerke München (SWM), Munich's public municipal utilities company and one of Germany's largest energy and infrastructure companies. Their contribution to the energy transition includes ambitious aims to produce enough electricity from renewable sources to cover Munich's energy needs by 2025 and to achieve CO_2-neutral coverage of Munich's district heating demands by 2040. The city of Munich has 100% ownership of SWM (Stadtwerke München, 2022).

Another central actor in Munich's climate governance is the Energy Commission (*Energiekommission*), which since the 1980s has been tasked with developing long-term energy strategies for the city (Zimmermann, 2018). Permanent members of the Commission include city councilors, the mayor, the heads of the Department for Climate and Environmental Protection (RKU) and other related departments, the CEO of the Stadtwerke München (SWM), and external experts (Landeshauptstadt München, 2017).

The city of Munich incentivizes private citizens to get involved in climate action through its funding programs, the most well-known of these being the Energy Saving Funding Program or FES (*Förderprogramm Energieeinsparung*). First established in 1989, FES incentivizes climate-friendly building by providing funding to private homeowners and the housing industry for the building of new energy-efficient homes, renovation of old buildings, and installation of renewable energy (Landeshauptstadt München, 2014). In October 2022, this long-established funding program will be replaced by a new

funding program which reflects Munich's goal of achieving climate-neutrality by 2035. The focus of the Climate-Neutral Buildings funding program (*Förderprogramm Klimaneutrale Gebäude,* FKG) is similar to FES, with a special focus on the climate-neutrality goal (Landeshauptstadt München, 2022b).

In order to encourage local businesses to participate in climate action, Munich launched the Climate Pact for Munich Economy (*Klimapakt Münchner Wirtschaft*) as part of IHKM. Now entering its third implementation phase, the pact has been signed by 15 of Munich's largest companies. On signing, the companies voluntarily commit to active climate protection. They also share knowledge and work together on sustainable projects (Landeshauptstadt München, 2022c).

The city of Munich also collaborates with the surrounding district of Munich (*Landkreis München*) on the area of climate protection, especially in the area of mobility (Landratsamt München, 2020).

Paris

France made climate change a national priority in 2001 and issued its first climate plan in 2004 to meet Kyoto Protocol commitment. In February 2023, France passed its new Strategy for Energy and Climate including strategies up to 2028 (Climate Change Laws of the World, 2023). This report aims to provide guidance on renewable energy pathways towards the country's goal to net zero by 2050.

In 2019 and 2020, France launched an initiative that gained global attention, The Citizens Convention for Climate (*Convention citoyenne pour climat)*, a citizens' assembly which was asked to make proposals for how France could accelerate the reduction of its carbon emissions. Based in part on their recommendations, on May 4, 2021, France adopted a new climate law (Law No 2021-1104). Under the new Climate and Resilience law, legal modifications were made in order to reach the targets of a 40% reduction in GHG emissions by 2030, compared to 1990 levels, set by the Paris Agreements and the European Green Deal (IAEA, 2021).

The Île-de-France region has crafted its own regional strategy for sustainable action, the Ile-de-France Region master plan (SDRIF). In accordance with the MAPTAM[3] and Grenelle II[4] laws, the region must have a leading role in its sustainable development (Région Île-de-France, 2021). Its plan is broken down into five action plans, differing in areas related to decarbonization, biodiversity preservation, health, equality, and consumption (Région Île-de-France, 2021).

For further information on the analysis of France's vertical governance, readers are encouraged to consult Milestone report 1.2.

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[3] Law 2014-58 on Modernization of Territorial Public Action and Affirmation of Metropolises), passed on January 27, 2014. Loi n°2014-58 de modernisation de l'action publique territoriale et d'affirmation des métropoles.

[4] Law 2010-788 on National Commitment for the Environment, also referred to as the "Grenelle II Law." Loi n°2010-788 du 12 juillet 2010 portant engagement national pour l'environnement. The law confirms, complements and implements France's sustainable development goals set out in the 2008 Grenelle I law, (see Legifrance, http://www.legifrance.gouv.fr, last visited Aug. 9, 2023)

Horizontal Climate Governance and the Role of Various Stakeholders in Paris

Horizontal climate governance takes many forms in the city of Paris. The city administration has been led by the mayor, Anne Hidalgo of the Socialist Party (*Parti socialiste*), since 2014 (Ville de Paris, 2022a). Below the mayor are 32 deputy mayors, one of whom is in charge of the ecological transition, the climate plan, water and energy (Ville de Paris, 2022b).

Citizen participation is at the heart of Paris' climate policymaking. Since 2019, Parisians are invited to participate in a debate before any meeting of the municipal councils. Through this so-called Paris citizens' council (*Le Conseil de Paris citoyen*), citizens can express their opinions on issues debated by the Council of Paris, ask questions, and propose ideas. (Ville de Paris, 2019a). The city took further measures to involve citizens in policymaking in 2019, establishing a permanent citizens' assembly (*l'Assemblée citoyenne*) which consists of a demographically-representative group of 100 Parisians over the age of 16 (Ville de Paris, 2022c). Elected for a term of one year, members of the citizen's assembly are actively involved in political decision making, for example by proposing issues for the political agenda, drafting *délibérations* (local draft laws), and requesting the critical examination of an issue. The establishment of this assembly was triggered by the Yellow Vest (*Gilets Jaunes*) protests and the related distrust in institutions (Bürgerrat, 2021). Besides these two platforms, citizens can get directly involved in the city's climate action by joining the community of Climate Volunteers (*Volontaires du Climat*). Volunteers have the opportunity to participate in workshops, challenges, and the Climate Agora (*l'Agora du Climat*), one of the shared governance tools established with the Paris Climate Plan (Ville de Paris, 2019b).

The Paris Climate Action Plan (*Plan Climat de Paris*) is the overarching framework in Paris' climate governance. It was first adopted in 2007 and was revised in 2018. Developed in consultation with citizens, the plan outlines 500 concrete measures which can lead the city towards achieving its goal: carbon neutrality and 100% renewable energy by 2050 (Ville de Paris, 2021).

The city of Paris encourages the active participation of not only citizens but also companies. Paris-based companies and institutions can become partners in the climate plan by signing the Paris Climate Action Charter (*Charte Paris Action Climat*). On signing, they commit to helping the city to achieve carbon-neutrality and 100% renewable energy by 2050. Partners can choose from three different levels of commitment (silver, gold, platinum), depending on how much they want to get involved (Ville de Paris & Agence Parisienne du Climat, 2022).

The Paris Climate Charter project is jointly managed by the City of Paris and the Paris Climate Agency (*Agence Parisienne du Climat,* APC), another important actor in Paris' climate governance. The APC is an operational agency dedicated to the ecological transition of the city. It was founded in 2011 by a mix of public and private stakeholders to support the implementation of the Paris climate plan. The agency's main function is to inform and advise citizens in their own efforts against climate change, particularly in the area of building renovation (Agence Parisienne du Climat, 2017).

Furthermore, Paris is a member of several transnational city networks, including Energy Cities[5], the Covenant of Majors, C40 Cities, and ICLEI – Local Governments for Sustainability[6]. Here, the focus is mainly on collaboration, knowledge-sharing and example-setting.

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[5] https://energy-cities.eu/

[6] https://iclei.org/

Finally, the City of Paris works in close cooperation with the Greater Paris Metropolitan Area in matters of climate action. A key challenge many city governments face is funding carbon reduction projects and partnering at a local, national, and international level. To address these areas, the city of Paris experimented with setting up a local carbon-offsetting plan. It aims to connect project leaders and funders through a platform, and be accessible to citizens, stakeholders and the Greater Paris Metropolitan area (City of Paris et al., 2020). Several other initiatives outlined in the Paris Climate Plan were even designed with the Metropolitan in mind, for example bicycle sharing schemes and funding to improve wood heating. Efforts are also made to ensure that the Paris Climate Plan is compatible with the Metropolitan Climate Plan (City of Paris et al., 2020).

5. Stakeholder interview findings in local climate governance

To provide the basic material for the present analysis, the first step was to transcribe the interview material. In the second step, the interview material was reviewed for relevant climate governance aspects. The aim of this review was to prepare a rough overview as a basis for the subsequent final analysis. Based on the review of the 14 stakeholder interviews we identified seven preliminary categories, including six stakeholder collaboration processes and the impact of climate strikes (see Figure 2). The first category focuses on stakeholder collaboration formats, particularly the establishment of civil councils. The second category explores the collaborations between the city government and civil society, emphasizing the importance of their joint efforts. Additionally, the third category delves into the partnerships forged between the city government and the scientific community to address climate challenges. The fourth category examines the collaborations between the city government and different levels of government, illustrating the multi-level nature of climate governance. The fifth category explores the engagements between the city government and private businesses, highlighting their contributions to climate action. Finally, the sixth category centers around the collaborations between the city government and other cities, including participation in city networks such as the Covenant of Mayors. A further insight/finding highlights the significance of the climate strikes in 2019, which served as a pivotal moment in the cities' climate governance strategies.
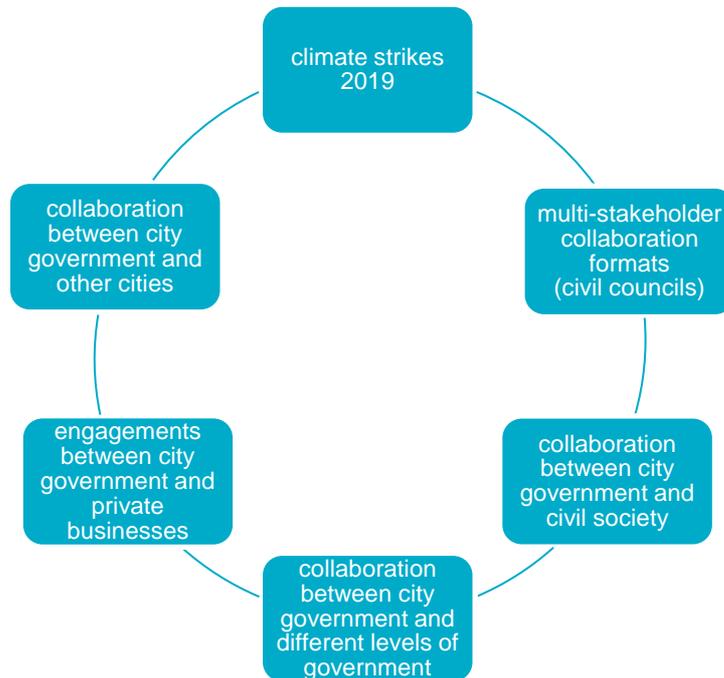
Figure 2:   **Categories inductively derived from the interview material**
Source: Own elaboration

In the third step, the seven preliminary categories were condensed into coherent superordinate categories by examining the existing material across the individual interviews for categorical commonalities and compiling them. This results in the two following upper categories:

a. climate strikes (Chapter 5.1) and

b. various interactions/collaborations between specific stakeholders (Chapter 5.2).

5.1 Climate Strikes

5.1.1 Background

In 2019, Greta Thunberg's Fridays For Future movement led the biggest global climate strike over 117 countries. These strikes were a series of demonstrations held worldwide to demand government action on climate change and aimed to disrupt the system and urge politicians to acknowledge that business as usual is no longer acceptable. The organizers encourage participation from all, including students, workers, and individuals from various backgrounds, to make their voices heard by disrupting their daily routines (Dolsak, 2019). It quickly became the largest climate mobilization in history, attracting a diverse

constituency of participants, and had a significant role in raising awareness about the urgency of climate change and putting pressure on governments to take stronger action (de Moor, 2022).

In December 2018, the protests began in Zurich, and the movement followed up in January 2019 by presenting a petition to the city's Health and Environment Department. The petition included three key demands: achieving a net-zero greenhouse gas (GHG) emissions target for the city by 2030, declaring a climate emergency, and raising public awareness about the climate crisis (Stadt Zürich, 2019, Dolan, 2023).

Crowds of more than 20,000 also gathered in Munich on September 20th, 2019 (Deutsche Welle, 2019). In December 2019, Munich joined multiple cities across Germany in announcing a climate emergency. At this time, it was decided that the city would become climate neutral by 2035 and that the city administration would reach climate neutrality by 2030 (Dolan, 2023).

5.1.2 Interview Insights

The importance of the climate strikes in 2019 was also shown within our stakeholder interviews, showcasing their influence on climate politics in city governances. Its impact on public opinion was highlighted by the director of UGZ in Zurich, Rene Estermann. According to Estermann, the climate strikes played a pivotal role in shifting public opinion and perception about climate change. He stated:

> *Without [the Climate Strike], it never would have happened. They really changed public feeling and meaning about climate change.* (Estermann, 2022)

This quote highlights the shift in public awareness and adaptation of the city of Zurich due to the climate strikes. In response to the demands proposed by the strikers, the city adopted new climate protection measures, examined the feasibility of reaching net-zero emissions by 2030, and established a Climate Forum in direct response to the movement's wishes (Dolan, 2023). Zurich's approach to a net-zero target for 2040, instead of 2030, also lead to disappointment from the Climate Strike movement. The movement had even developed their own action plan on how the city could reach net zero by 2030 (Klimastreik Zürich, 2022).

The 2019 strikes had a lasting impact on how society views the urgency and importance of addressing climate change. A member of the Munich Climate Council expressed how the strikes impacts climate politics in cities today. Alexander Rossner, business representative in the Munich Climate Council emphasized the effect of the climate strikes on climate politics. He said:

> *One and a half years ago [we saw] the single biggest step in climate politics that has ever been taken in Germany. I mean this was basically a turning point, and it's, you know, just a bunch of activists from Fridays for Future that have the case.* (Rossner, 2023)

This reflects how the strikes led to a turning moment in climate policy, with significant advancements being made. The activism of the Fridays for Future movement served as a push of climate politics to the agenda and to decisive actions towards mitigating the climate crisis. It marked a significant shift in the approach to climate governance in both Munich and Zurich, with both cities adopting new net-zero targets for 2035 and 2040. They also took concrete actions by developing new climate action plans and

implementing participatory platforms to engage citizens in decision-making processes related to climate issues. The quotes from René Estermann and Alexander Rossner provide important insights into the impact of the climate strikes of 2019 on both public opinion and climate politics, underlining the role played by the strikes in reshaping societal attitudes and pushing for substantial changes in climate politics and governance.

5.2 Stakeholder Collaboration Insights

5.2.1 Multi-Stakeholder Collaboration Formats

A focus on multi-stakeholder collaboration formats was recognized by multiple interviewees. These collaboration formats are presented through climate forums provided by the city governments and organizations, and open to various stakeholder groups (see Table 2).

Both Zurich and Munich recently established multi-stakeholder participation forums, partly in response to the demands of the climate strike movement. In Munich's Climate Council and Zurich's Climate Forum, the participants represent the different interests of business, politics, civil society, science and the city administration. While the aims of the Climate Council are to foster cross-sector communication and to gather constructive criticism on the city's climate policy decisions, the main goal of the Climate Forum is to gather information on the acceptance, willingness to act and needs of stakeholders in relation to climate action. Employees of the environment departments in both Munich and Zurich mentioned the challenge of following up on the outputs from these platforms and meeting the high expectations of the participants (Dolan, 2023).

Insights from the interviews show challenges in meeting external stakeholders' expectations and limited impact on decision-making processes due to bureaucratic procedures. Rainer Zah, the Head of Business Unit Environment in UGZ, Zurich, acknowledged the difficulty in fulfilling all the expectations of participants, stating:

> Sometimes [the participants] are getting frustrated because then at the end of the day for us, it's also difficult to … follow up and to fulfill all their expectations. So yeah, we're still working on it, it's not so easy to find a good way of participation. (Zah, 2022)

Similarly, Marianne Pfaffinger, a business representative in the Munich Climate Council, expressed doubts about the effectiveness of stakeholder opinions, remarking:

> I think we'll have to try to change a few things about it. Because my feeling at this point is we're being asked for our opinion, we're being listened to, but I don't know if it has any effect on the decision-making. (Pfaffinger, 2022)

These insights reflect the complexities and room for improvement in growing stakeholder participation and ensuring meaningful influence in decision-making processes. Additionally, the interviews brought concerns on the transparency and representativeness of the selection process, bringing attention to the importance of inclusive and open participation. There was a lack of awareness among the general public regarding these initiatives, suggesting the need for improved communication and outreach efforts from

the city. Interviewees also pointed out the importance of considering co-benefits and ensuring that outside stakeholders and the city government can mutually benefit from these collaborative formats.

Table 2:   Platforms for stakeholder participation

Stakeholder	Munich	Zurich	Paris
Multiple Stakeholders	Climate Council	Climate Forum, Climathon	Le Conseil de Paris Citoyen, L'Assemblée Citoyenne
Businesses	Climate Pact for Munich Economy, ECOPROFIT, Munich climate – Munich companies do climate protection	Eco-Compass, Climate Platform of the Zurich Economy	Paris Climate Action Charter
Civil Society	089klimaneutral	Participate in Zurich's Future	Climate Agora

5.2.2 Collaborations between the city government and civil society

Both Munich and Zurich have established digital platforms for participation in climate decision-making, with their aim being to gather opinions from broader society. In both cities, members of civil society groups can apply for funding for sustainable projects. Munich appears to place a high value on the contribution of such projects to achieving the goal of climate neutrality, making almost €2 million available in funding for the year 2023. In Zurich, a large sum of money was recently provided by the Zurich Cantonal Bank when it commemorated its 150 anniversary, with 3.4 million CHF intended to be used for funding sustainable projects. 12 million CHF could soon be available for funding non-profit organizations with sustainable aims, as well as businesses, if the new funding program "KlimUp" is approved by the Municipal Council (Dolan, 2023).

Insights from the interviews convey valuable observations and challenges within collaborations of the city governments and civil society groups. Phillip Wachter, a research associate at IFEU (Institut für Energie und Umweltforschung) emphasized the broader benefits of citizen participation processes, saying:

> *I'm not sure if the citizen participation is leading to new ideas. But at the end, it was not just about the climate actions we found – it was more about the participation process. (…) I think this was the real benefit of the whole process so all the stakeholders, they now are ready and want to start. And all the citizens now want to start as well and be part of it, and I think this was the main benefit from the big process. (Wachter, 2023)*

Citizen participation has the potential to bring benefits beyond climate actions, with one important advantage being found in the participatory process itself. The value of engaging different groups of stakeholders in urban climate governance extends to investing in civil awareness, promoting a shared responsibility and a more transparent decision-making process.

Konrad Schonleber, office manager in RKU, emphasizes the importance of civil society groups in specific initiatives, citing an example of the bike traffic initiative in Munich. This exemplifies how citizens' initiatives have the potential to play a significant role within climate collaborations. He explained:

> *One that is quite important is the group that organized Volksentscheid citizens Initiative. (...) There was a citizens initiative for more cycling traffic. And they're really well linked, one of their heads is in the Social Democratic Party in the city council. So they are also embedded in the process of this mobility department in the processes when they plan bike traffic works. (Schonleber, 2022)*

Marianne Pfaffinger, the Head of Participation at Green City Experience, addressed challenges in civil participation, including different levels of motivation among higher-ranking officials and the financial costs associated with such participation. She stated:

> *You have some municipalities where people are like, even in the higher ranks are very motivated to do this, and then you have really good conditions to implement this. I would say that's one of the main challenges for the young motivated people that, you know, higher up, there's not the motivation that's necessary. And I'd say money, definitely. I mean, participation is expensive. (Pfaffinger, 2022)*

Pfaffinger further highlighted the rapid changes in public participation, noting the challenges for administrations to keep up, stating:

> *When I started, ultimately 13 years ago with public participation, it was a different world and it's changing rapidly and that's a good thing, but it's hard for administrations to, you know, keep, keep up with the changes and develop in that sense. (Pfaffinger, 2022)*

This rapid transition reflects on challenges for administrations to adapt and keep up with evolving practices.

The stakeholder interviews on civil society collaborations reflect the value of citizen participation, the importance of civil society groups in driving initiatives, as well as the challenges associated with motivation, financial constraints, and adapting to evolving participation practices. They also provide valuable information into the processes and complexities of collaborations between city governments and civil society.

5.2.3 Collaborations between the city government and science

For both cities of Munich and Zurich, interactions with science mainly take place within the context of expert reports prepared by external institutions. In the development of their net-zero strategies, both Munich and Zurich sought the expert advice of renowned research institutes or sustainability consultancies. The commissioning of external research partners is not just about gaining expert knowledge, as the city administration already has a large amount of expertise; it is often about gaining

an objective perspective, easing their workload and in some cases, profiting from the company's experience in moderating interactions. Both city administrations suffer from a shortage of staff. Given budget restrictions, they tend to hire external groups to perform specific studies instead of hiring permanent staff (Dolan, 2023).

The interviews frame an important theme centered around the interface of science and policy through collaborations between city governments and research institutions. Prof. Anthony Patt, a Professor of Climate Policy at ETH Zürich, emphasized the significance of framing scientific information in ways that enable policymakers to take concrete action. He explained:

> *The policymakers, they've all been exposed to the science really well. They know all the basics. The question is more how to frame the science in ways which are useful for them to take concrete action. (Patt, 2023)*

There is a need to effectively translate scientific knowledge into practical terms that inform policymaking. When communicating information about climate change, relying solely on factual data may not be the most effective approach to engage with different audiences (Badullovich, 2020). According to different literature, future research can benefit from embracing diversity by using quantitative and qualitative research methods to assist on the understanding of climate change (Badullovich, 2020, Schipper, Dubash & Mulugetta, 2021). Framing can, therefore, be considered a valuable tool to teach and initiate dialogues with different stakeholders (Scheufele, 2018).

Rainer Zah, the Head of Business Unit Environment in UGZ, Zurich, underscored the importance of personal relations in assisting the gap between science and policy. He said:

> *There are some people [in the UGZ] that come directly from ETH, so they're very close to science... I think without those personal relations, we would not be part of the project, I would say. So, I think that those personal relations, they're quite crucial. (Zah, 2022)*

This emphasizes the value of interpersonal connections in facilitating collaborations between research institutions and government entities. Interpersonal connections within staff and external stakeholders make for a fundamental element of climate governance, and its informal aspects have shown to significantly impact the outcomes of policies and processes (Leck, 2015).

Phillip Wachter, a researcher of municipal climate protection at Ifeu, mentioned the importance of collaborations between scientific academic institutions and city governments.

> *When collaborating with the expert group, it's more like detailed discussions on methods. However, with the group from the cities, they have more of a perspective on how we can use the results of the study. So, it's good to have both these perspectives. (Wachter, 2023)*

He emphasizes the value of having different perspectives in climate governance: the scientists engaging in detailed discussions and the city government focusing on how to effectively apply the results of the study. This brings attention to the importance of a collaborative approach that combines scientific expertise with practical processes, fostering a mutually beneficial relationship between researchers and city governments.

5.2.4 Collaborations between the city government and private businesses

Both cities, Munich and Zurich, have implemented specific programs to engage businesses in climate protection initiatives. Munich's approach involves three different programs, catering to different categories and size of companies. One program targets the city's largest companies, while the remaining two are directed towards small and medium-sized enterprises. During the stakeholder interviews, interviewees expressed doubts regarding their effectiveness. An employee from RKU even went so far as to dismiss them as mere symbolic gestures. This highlights the need for a deeper comprehension of how cities and businesses can collaborate to effectively achieve their shared objectives (Dolan, 2023).

In Zurich, a similar approach is adopted, with a stronger emphasis on fostering networks and connections. The implementation of the Eco-Compass program offers free consulting services to small and medium-sized companies, providing guidance in the area of sustainability. Additionally, regular networking events are organized, enabling participating companies to share their experiences and insights regarding the implementation of climate protection measures. Another initiative, the Climate Platform of the Zurich Economy, facilitates business lunches dedicated to discussions on sustainable business models (Dolan, 2023).

Multiple Zurich interviewees highlighted aspects of city-business collaborations that were not mentioned by the Munich stakeholders. They stressed the crucial role played by trade associations as intermediaries in facilitating interactions between the city and businesses, and the importance of collaboration with businesses to access data on indirect emissions (Dolan, 2023). Alexander Rossner, Head of Sustainability Consultancy at Zukunftswerk eG, emphasizes the gap between large corporations and small local businesses in Munich, stating:

> *The gap is by far too big between BMW and a small bakery in Munich Sendling... So the impression could be that climate change and climate protection in Munich is part of the big corporations and that the small, medium-sized companies are not invited to take part in this process. (Rossner, 2023)*

Addressing this gap becomes crucial to ensure the involvement and inclusivity of all business types in Munich's climate protection efforts.

In collaborations between cities and stakeholder groups, especially businesses, cooperation parties are often unsure how they can support each other so that both sides benefit. Cities tend to overwhelmingly rely on consulting and certification programmes for businesses in an attempt to get them involved in climate protection, but the impact of such programmes is unclear. More needs to be done to ensure that the incentives are effective and that smaller businesses are not excluded. It could also be beneficial to combine such programmes with regular networking events, as in Zurich. Most importantly, there needs to be a better understanding of how businesses and cities can form synergetic relationships in the area of climate action (Dolan, 2023).

5.2.5 Intergovernmental collaborations

Insights from the interviews reflected challenges and similarities faced by city governments on their interactions with higher levels of government and other departments. Some of these challenges include

the impact of the absence of a mandate on an urban level, as climate protection is often a voluntary task for cities, resulting in varying levels of commitment and climate action.

Due to climate protection initiatives in cities often relying on voluntary efforts, cities often face limited external funding and budget constraints on implementing climate action strategies. Konrad Schonleber, officer manager at RKU in Munich, highlights the challenge of limited external funding and budget constraints for climate action in cities. He stated:

> *This is, I guess this is a problem that you have on many political areas, but a city cannot borrow money freely. So we always we are under a strict rule that we can borrow money for investment somehow but we cannot in our normal running business, it has to be a balanced budget every year. And that's controlled also by the state of Bavaria. (Schonleber, 2022)*

Political differences between cities and states were identified both as a constrain and accelerator to city climate governances, with the potential of either impacting or pushing collaborative action. Interviewees highlighted the limited ability of cities to influence higher levels of government, indicating a lack of voice in decision-making processes, yet, Schonleber discussed pushes in politics and administrative structures related to climate action. He noted:

> *The Green Party is now the biggest fraction, or the biggest parliamentary group in the city council. The politics towards climate have changed as well. And the most visible change was that the Referat (…) The city ministry used to be together with the department for health. So it was health and environment, and now there's a department for health and then there's a department for climate and environment. (Schonleber, 2022)*

In order to tackle communication restraints, there have also been efforts of integration of climate activities in the city councils. Wolfgang Qual, employee at RKU, discussed cross-departmental structures and evaluation processes to integrate climate impacts into city council decisions. He explained,

> *another process which started last year is evaluation of climate effects of all city council decisions. So if you have a kind of we call in German 'Beschlussvorlage,' this is a document which goes to the city council in order to decide on let's say street, tunnel or light. We try to motivate our colleagues in the other departments to think about the climate impact and then make a small evaluation, is it positive or negative, and then send this evaluation to us and we look over it and then we say, okay, or no, we don't accept or we do not have the same opinion. So this is the so-called 'Klimaschutzprüfung'. (Qual, 2022)*

The same commitment can be seen in Munich's Climate Statute, Section 1, where it is explicitly stated that climate protection and adaptation need to be included in all plans and decisions of the city (Klimasatzung, 2021).

According to Anthony Patt, Professor of Environmental Policy at ETH Zurich, cities often exhibit more progressive politics compared to rural areas, while the political system in Switzerland gives rural areas disproportionate power. He explains,

the cities are more progressive politically than the country. In Germany too, rural areas are much more conservative. And the way the political system is set up in Switzerland, similar to the United States, the rural areas hold a disproportionate amount of power in terms relative to their populations. (Patt, 2023)

Overall, studies at the London School of Economics and Political Science (LSE) have shown global associations between the place of residence and the Index of Progressive Values, stating how cities can often be poles of progressive thinking, compared to rural areas in the same respective countries (Luca, Terrero-Davila, Stein & Lee, 2022). Different areas with diverse views on climate action is one challenge intergovernmental collaborations may face.

5.2.6 Collaborations between the city government and other cities

Collaborative networks at the European level, such as the 100 climateneutral cities and the Circular Cities and Regions Initiative, play a significant role in fostering collaboration between different cities. Konrad Schonleber touched on the importance of these networks, stating,

the European Union is actually pretty strong on this networking account. So we are mostly from the European level. There are some projects that we participate in. (…) There are two, so one is 100 climateneutral cities. And where there is a quite close collaboration or a close link to the other German cities, at least there's I think nine in Germany. And the other one is CCRI which is the Circular Cities and Regions Initiative where we are one of the pilot cities. (…) I would say that this plays a big role. (Schonleber, 2022)

Both the cities of Munich and Zurich are members of multiple transnational city networks, including Climate Alliance, ICLEI, Eurocities and the Covenant of Mayors. Despite their important role as intermediaries in city-to-city interactions, several stakeholders in Munich and Zurich expressed doubt regarding the importance of these networks, viewing them as more symbolic than pragmatic. These memberships can also present an additional administrative burden, given that members are regularly required to upload up-to-date climate plans and emission inventories to the relevant websites. Climate Alliance was the network viewed most positively by municipal employees, because it offers practical support such as tools and advice. For some city officials, exchanges with other cities in the same country are seen as more useful, due to the lack of applicability of best practices from cities in other countries (Dolan, 2023).

Cities also collaborate through knowledge-sharing tools. As an example, used in Munich, the Klimaschutz-Planer tool serves as a valuable resource for municipalities and city councils in their climate protection efforts.[7] Wolfgang Qual explained the functionality of the tool, stating,

we have kind of tool, it's the Klimaschutz-Planer. It's a web tool designed for the municipalities. And we enter our energy and traffic data into this tool, and then it calculates value, and these values are written into a report and report is published in the city council. (Qual, 2022)

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[7] See https://www.klimaschutz-planer.de

The collaborative tools can enable cities to input relevant data, generate data-based reports, and publish them in the city council. It provides a standardized approach to monitor the city's progress in climate strategies, pushing for a more transparent and open climate governance structure.

6. Discussion and conclusions

This report has provided preliminary insights on the first round of stakeholder interviews and an overview of local climate governance interfaces with a focus on the pilot cities of Zurich and Munich. Together with part 1 "Emission inventories for cities and available data", the report fulfills Milestone 2 of the PAUL project. This report further elaborates on the governance interfaces outlined here and integrate additional information on the policy needs of the cities. In order to gather such information, interviews were conducted with relevant decision makers in the cities of Munich and Zurich.

The information gathered from these interviews will also be used in Deliverable 1.3 "Preliminary findings on climate governance and the use of emissions data in the pilot", which is due in December 2023 as well as in Deliverable 1.4 "Report comparing emissions data use in climate governance in Munich, Zurich, and Paris", which is due in December 2025. Due for submission at the end of the project timeline, the latter report, along with four policy briefs for the pilot cities and EU, will form part of the final output of the project.

Through the report's multi-governance analysis of the three pilot cities, the following key findings were established:

- All three cities have measures towards the decentralization of government and the push for horizontal and multi-level climate governance, with France's climate governance being the most centralized of the three.

- Vertical climate governance differs across the three pilot cities. France has a stronger national climate governance, while Germany and Switzerland share horizontal approaches relative to the strength of their regional and city governments.

- Climate governance in the cities of Munich and Zurich has shown to rely on collaborations from multiple stakeholder groups.

- Intergovernmental collaborations between different levels of government or different departments are integral to the pilot cities' work.

- City officials, such as RKU employees Wolfgang Qual and Konrad Schonleber, seem to recognize the importance of horizontal interactions between municipal departments (Dolan, 2023).

- Multi-stakeholder engagement formats are present in all cities, and challenges such as transparency and effectiveness seem to be a common narrative between different stakeholders groups.

Lastly, we have mapped horizontal and vertical interactions and collaborations from the cities with different stakeholder groups and levels of government (see Figure 3). The city plays a central role in engaging with diverse stakeholders to achieve its net-zero emissions goal. These interactions involve different dimensions, including internal dynamics within the city, exchanges between different levels of

government, and collaborations between cities. Intermediaries like national associations of cities (NACs) play a crucial role in facilitating these interactions and bridging the gap between cities and national governments. The interactions and collaborations between stakeholders are complex and varied, with the city at the forefront of driving these efforts (Dolan, 2023).
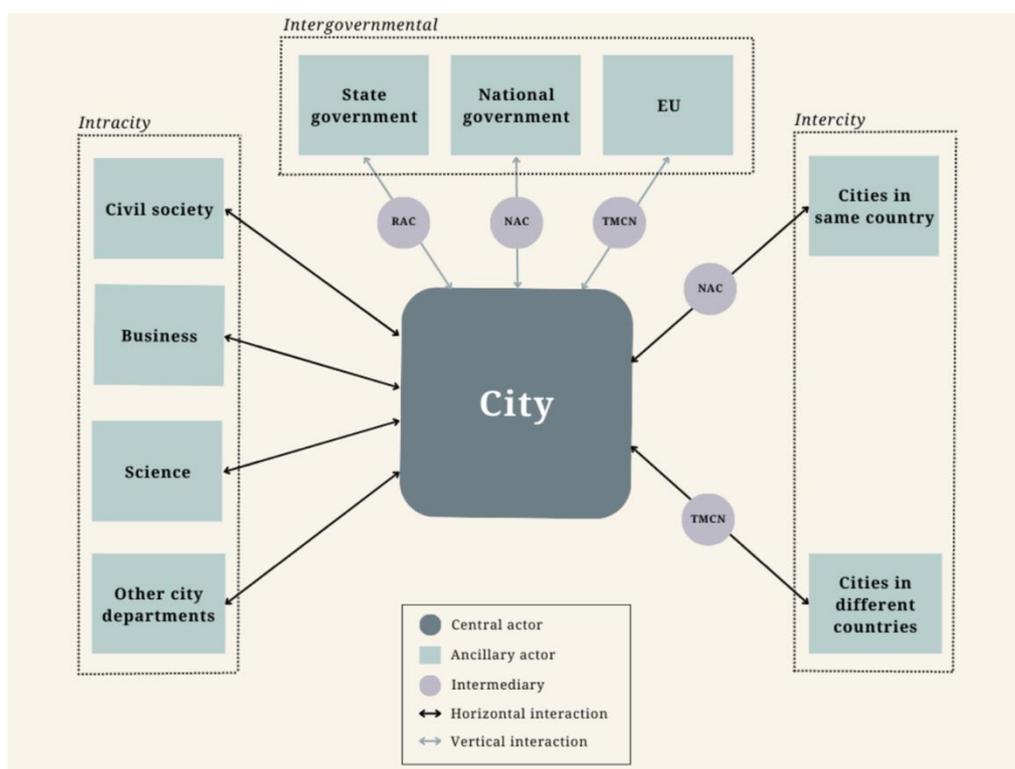
Figure 3: **Key actors in urban climate governance and the interactions between them (Source: Dolan, 2023, pp. 69)**

Now that the basic structures of climate policy and policy making in Munich and Zurich has been investigated and substantiated with interviews, the next stage of our research is being pursued. General findings from document analysis related to Paris, are now to be triangulated with interviews with key stakeholders in Paris, and a second phase of interviews with other stakeholders – also tied to the MLG system -- is planned in order to gather further insights, especially regarding the use of emissions data by decision makers.

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Appendix

I. Interview guide with sample questions

Questions for all stakeholders

Introductory questions

• Could you tell me a bit about your role as _____? What are your key responsibilities and goals?

• Can you tell me a bit about the internal organization of your team/department/organisation?

• Could you describe the most recent project which you/your organisation worked on?

• What are some of the challenges your organization has faced regarding climate action in the city of ____?

Interaction with other stakeholder groups

• Who do you need to interact/collaborate with in order to achieve your goals or the goals of your organisation?

• How does this interaction work? Who usually initiates the contact?

• Have you experienced a set system for these collaborations, or were they mostly voluntary/ad-hoc?

• What are the advantages of such cooperation?

• What kind of challenges arise when cooperating with <stakeholder group>? How could these challenges be overcome?

• Could you give me an example of successful cooperation and unsuccessful cooperation with another stakeholder group?

• How could the city better involve civil society/businesses/science in shaping and implementing climate protection measures?

Closing questions

• Is there anything else you would like to tell me before we end the interview?

• Do you have any questions for me (e.g. about the research)?

• Would it be ok for us to contact you again at a later stage to clarify some of your comments or perhaps to invite you to another short interview in the next phase of our research?

• Is there anyone you would recommend us to talk in order to learn more about the topic?

Questions for city administration (/politics) stakeholders

• How often do you interact with other departments in the city administration? How would you describe this collaboration?

• How often do you interact with regional, national and supranational stakeholders? How would you describe such interactions?

• To what extent do higher levels of government place obligations on lower levels and constrain your ability to act on climate change?

• To what extent does the city's climate action primarily serve to fulfill obligations at the regional, national or international level?

• Which concrete measures have been initiated on a voluntary basis?

• How do you deal with climate policy areas which the region, not the city, controls?

• What role do transnational city networks play in the city's climate protection strategy?

• In your opinion, which are the most important (city) stakeholders when it comes to shaping and implementing climate policy?

• What role does civil society/business/science play in shaping and implementing climate protection measures?

• What do you/your team need in order to make good climate policies and monitor their effectiveness? How could other stakeholder groups help you?

• Have you noticed a change in the city's interactions with other stakeholder groups since the new net-zero goal was established?

Questions for science/academia stakeholders

• In your opinion, what is the role of science in climate policy-making?

• Have you had experience in the climate policy field? Could you describe this experience?

• Have you worked with the city of _____? If so, how would you describe the collaboration? What kinds of challenges did you face?

• How could the city better involve science in climate policy-making and the implementation of climate protection measures?

Questions for business stakeholders

• How much of your company's climate action is done to fulfil obligations from the city, regional, national or international level and how much is voluntary?

• Have you worked directly with city stakeholders in the climate policy field? Please tell us more about it.

• From your experience, in which ways can businesses contribute to city climate policies?

• How could the city better involve businesses in climate policy-making and the implementation of climate protection measures?

• What are some of the challenges you have experienced with incorporating sustainability into your company?

Questions for civil society stakeholders

• Could you tell me a bit about how you became involved in climate protection initiatives in the city?

• What are some of the challenges your organization has faced regarding climate actions in the city of ___?

• Have you had experience in the climate policy-making process? If so, could you elaborate?

• How could the city better involve civil society in climate policy-making and the implementation of climate protection measures?

II.   List of Interviewees and Details on Interviews

Interviewee	Position	Date	Format	City	Stakeholder Group
Stefan Kessler	Associate Partner at INFRAS	25.10.2022	In person	Zurich	Science
Jonas Fricker	Project leader Climate Protection Net Zero in UGZ	25.10.2022	In person	Zurich	City Administration
Rainer Zah	Head of Environment Division in UGZ	27.10.2022	In person	Zurich	City Administration
Markus Keller	Managing director of Climate City Zurich	04.11.2022	Online	Zurich	Civil Society
Wolfgang Qual	RKU staff member	11.11.2022	Online	Munich	City Administration
Stephan Mohr	Civil society representative in Munich Climate Council	12.11.2022	In-person	Munich	Civil Society
Rene Estermann	Director of UGZ	25.11.2022	Online	Zurich	City Administration

Konrad Schönleber	RKU Office Manager	02.12.2022	Online	Munich	City Administration
Marianne Pfaffinger	Business representative at Munich Climate Council	21.12.2022	Online	Munich	Business, Civil Society
Philipp Wachter	Energy and Environment Researcher at IFEU	03.01.2023	Online	Heidelberg	Science
Alexander Rossner	Business representative at Munich Climate Council	05.01.2023	Online	Munich	Business, Civil Society
Edda Vanhoefer	Managing Director at Change Corporation	19.01.2023	Online	Munich	Business
Anthony Patt	Professor of Climate Policy at ETH Zurich	03.02.2023	Online	Zurich	Science
Dominik Brunner	Atmospheric modeling and remote sensing researcher at EMPA	21.09.2022	Online	Zurich	Science