

TECHNISCHE UNIVERSITÄT MÜNCHEN



Fakultät für Architektur

Lehrstuhl für energieeffizientes und nachhaltiges Planen und Bauen

**Enhancing Joint Institutionalization of Climate Change Mitigation
and Adaptation in City Administrations –
The Adaptation Institutionalization Framework and its
Applications**

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Vollständiger Abdruck der von der Fakultät für Architektur der Technischen
Universität München zur Erlangung des akademischen Grades eines

Doktors der Philosophie (Dr. phil.)

genehmigten Dissertation.

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Die Dissertation wurde am 14.12.2020 bei der Technischen Universität München
eingereicht und durch die Fakultät für Architektur am 16.03.2021 angenommen.

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Acknowledgements / Danksagung

Familie, Beruf, und dann noch Doktorarbeit. Verschiedene Rollen und Welten, welche miteinander in Einklang gebracht werden mussten. Meine Dissertation behandelt Synergien von Klimaschutz und Klimaanpassung in der kommunalen Verwaltungsstruktur. Im Grunde eine Analogie für meine persönliche Situation: Um alle Welten vereinbaren und alle Rollen erfüllen zu können, brauchte es Synergien zwischen Familie, Beruf und Doktorarbeit.

Durch meine Wegbegleiterinnen und Wegbegleiter war dies glücklicherweise möglich. Daher gebührt ihnen mein größter Dank: Meiner Frau Sabrina und meiner Tochter Laura, welche mich kontinuierlich angetrieben und mir den Rücken freigehalten haben. Jakob Frommer, welcher mir stets mit Rat zur Seite stand und mich in meinem Bestreben der nebenberuflichen Promotion immer unterstützt hat. Julia Brasche für den hilfreichen und stets motivierenden Austausch. Meinen Interviewpartnern in Mwanza und den deutschen kreisfreien Städten; ohne ihre freundliche Unterstützung wäre diese Arbeit in der vorliegenden Form nicht möglich gewesen.

Und ganz besonderer Dank gilt Christine Wamsler und Werner Lang, vor allem für die stete, vertrauensvolle und sehr konstruktive Betreuung; ich hoffe, dass wir in Zukunft noch ein paar Projekte gemeinsam angehen können.

Ganz herzlichen Dank für die tolle und erkenntnisreiche Zeit!

Abstract

Cities are key actors in reducing both the causes of climate change (mitigation), and its impact (adaptation). In this context, efforts are being made to enhance efficiency, and both theory and policy are increasingly focused on synergetic strategies and measures. However, there is a lack of scientific knowledge on the institutional conditions that are required to achieve these synergies in practice.

Against this background, this thesis analyzes the institutional setting of municipal administrations. It puts forward the hypothesis that a joint institutionalization of both mitigation and adaptation – called *adaptigation* – is a crucial precondition for implementing joint measures. The focus is on understanding, assessing and supporting adaptigation in city administrations. It draws upon institutional, organizational and climate-related theories and frameworks, along with empirical analyses, set theory and Boolean algebra.

At the nexus between qualitative and quantitative perspectives, this research is based on a mixed methods approach. The latter combines expert interviews, document analyses, and Qualitative Content and Qualitative Comparative Analyses, with a Social Network Analysis, broader web-based surveys, and non-parametric significance tests. The empirical scope encompasses 107 independent cities in Germany, but the results are applicable to cities worldwide.

- This thesis develops a pioneering framework for analyzing and optimizing the institutionalization of mitigation and adaptation in city administrations (the Adaptigation Institutionalization Framework, cited in the recent Special Report of the Intergovernmental Panel on Climate Change). It also provides a practical instrument that cities can use when taking decisions about the institutionalization of climate change policies.
- The application of the framework shows that a joint organizational institutionalization of both mitigation and adaptation (i.e. joint departments) is a significant enabling factor for the development of joint actions. The results also show that explicit, joint climate action plans are, however, not mandatory for joint action.
- It presents a practical example of how cities can use the framework, along with network analytics, to enhance joint institutionalization and mainstreaming in advisory committees. A first-time and comprehensive overview and classification of 592 advisory committees in German cities demonstrates that the mainstreaming of mitigation and adaptation in all kinds of sectoral, non-climate-specific committees is possible. The results highlight that advisory committees play a vital role in

institutionalizing adaptation, and the thesis puts forward some recommendations regarding how climate issues can be implemented in these formal collaboration structures.

This thesis contributes to the global objective of limiting climate change, and the United Nations Sustainable Development Goals regarding climate action. It concludes by highlighting the scientific and practical value of the research and its products, and outlines further needs. It contributes to both theory and practice. From a theoretical perspective, it presents an innovative approach to theories that seek to integrate organizational theories and climate policy. From a practical perspective, it can help cities worldwide to optimize their structures, enhance their potential to initiate and conduct combined mitigation and adaptation actions, and support synergies.

Kurzfassung

Städte gelten als wichtige Schlüsselakteure bei der Reduzierung der Ursachen des Klimawandels (Klimaschutz) sowie seiner Auswirkungen (Klimaanpassung). Im Fokus von Forschung und Verwaltungspraxis stehen daher zunehmend Strategien und Maßnahmen, die auf Synergieeffekte zwischen Klimaschutz und Klimaanpassung abzielen. Welche institutionellen Voraussetzungen in den Stadtverwaltungen für eine erfolgreiche Realisierung solcher synergetischer Maßnahmen erforderlich sind, ist allerdings weitgehend unerforscht.

Um diese Wissens- und Praxislücke zu schließen, untersucht die vorliegende Arbeit das institutionelle Setting von Kommunen und sucht nach Wegen, dieses zu verstehen, bewerten und optimieren zu können. Forschungsleitend ist hierbei die Hypothese, dass eine gemeinsame institutionelle Verankerung von Klimaschutz (Mitigation) und Klimaanpassung (Adaptation) in Stadtverwaltungen - hier „Adaptigation“ genannt - eine entscheidende Voraussetzung ist für die Realisierung von Synergien auf Maßnahmenebene.

Das theoretische Konstrukt der Arbeit fußt insbesondere auf institutionellen, organisatorischen und klimabezogenen Theorien und Frameworks, einschlägigen Studien sowie der mathematischen Logik (Mengenlehre und Boole'sche Algebra). Im Sinne eines Mixed-Methods-Ansatzes werden qualitative und quantitative sozialwissenschaftliche Methoden kombiniert. Über Experteninterviews, Dokumentanalysen und umfassende Websurveys (u.a. in Ratsinformationssystemen) werden Daten erhoben und mittels qualitativen Inhaltsanalysen, Qualitative Comparative Analysis (QCA), sozialen Netzwerkanalysen sowie nichtparametrischen Signifikanztests analysiert. 107 deutsche kreisfreie Städte bilden die Grundgesamtheit für die empirischen Analysen; die Resultate sind grundsätzlich anwendbar auf Stadtverwaltungen weltweit.

- Die vorliegende Arbeit entwickelt mit dem *Adaptigation Institutionalization Framework* (zitiert im aktuellen Sonderbericht des Intergovernmental Panel on Climate Change IPCC) ein theoretisch fundiertes und neuartiges Analyseinstrument, welches nicht nur zum wissenschaftlichen Erkenntnisgewinn herangezogen werden kann, sondern auch auf die Optimierung der Verwaltungspraxis vor Ort ausgerichtet ist.
- Bezogen auf die eingangs postulierte Hypothese zeigt die empirische Anwendung des *Frameworks*, dass die Bündelung der Themenfelder Klimaschutz und Klimaanpassung in einer Organisationseinheit (z.B. Fachabteilung) eine signifikante Voraussetzung ist für die Generierung von Synergieeffekten auf Maßnahmenebene. Explizit gemeinsame Klimaschutz- und Klimaanpassungskonzepte sind hierfür hingegen nicht zwingend.
- Die Arbeit zeigt beispielhaft und praxisorientiert auf, wie Städte das *Framework* nutzen können, um *Adaptigation* in formalisierten, kommunalpolitischen

Beratungsgremien (Beiräten) zu etablieren und weiterzuentwickeln. So kommt eine bislang einmalige und umfassende Erhebung und Klassifikation von insgesamt 592 Beiräten zu der Erkenntnis, dass Klimaschutz- und Klimaanpassungsaspekte in alle kommunalen Beiräte jeglicher thematischer Ausrichtung integriert und fest verankert werden können (Mainstreaming). Unter Zuhilfenahme netzwerkanalytischer Methoden werden zudem konkrete Vorschläge entwickelt, wie eine grundlegende Implementierung und das Mainstreaming erreicht werden kann.

Die Arbeit liefert damit einen Beitrag zum globalen Ziel der Begrenzung des Klimawandels sowie zur Erreichung der klimabezogenen Ziele der Sustainable Development Goals der Vereinten Nationen. Sie schließt mit einer Reflektion über den gleichsam wissenschaftlichen wie praktischen Wert der Ergebnisse und benennt weiteren Forschungsbedarf. So trägt das Framework und seine Anwendungen in innovativer und erkenntnisreicher Weise zum wissenschaftlichen Diskurs einer Verflechtung organisationstheoretischer und klimapolitischer Ansätze bei. Die Ergebnisse der Arbeit können zudem Stadtverwaltungen weltweit zur Analyse und Weiterentwicklung der eigenen institutionellen Konfiguration dienen und so deren Handlungskapazitäten zur Realisierung synergetischer Klimaschutz- und Klimaanpassungsmaßnahmen verbessern.

List of abbreviations

| | |
|------------------------|---|
| A |adaptation |
| Aachen-Gesetz | Aachen City Region Act (Gesetz zur Bildung der Städteregion Aachen) |
| AIF |Adaptigation Institutionalization Framework |
| BayGO |Municipal Code of Bavaria (Gemeindeordnung für den Freistaat Bayern) |
| BayLKrO |Landkreisordnung für den Freistaat Bayern |
| BayNatSchG | Bavarian Nature Conservation Act (Gesetz über den Schutz der Natur, die Pflege der Landschaft und die Erholung in der freien Natur - Bayerisches Naturschutzgesetz) |
| BbgKVerf |Municipal Constitution of Brandenburg (Kommunalverfassung des Landes Brandenburg) |
| BBSR | German Federal Institute for Research on Building, Urban Affairs and Spatial Development (Bundesinstitut für Bau-, Stadt- und Raumforschung) |
| CIC |climate integrative committee |
| CO₂ | carbon dioxide |
| CSC |climate specific committee |
| ECA | variable of the AIF: external-internal collective actor |
| FPI | variable of the AIF: formal planning instrument |
| fsQCA | fuzzy-set Qualitative Comparative Analysis |
| GemO BW |Municipal Code of Baden-Württemberg (Gemeindeordnung für Baden-Württemberg) |
| GemO Rh.-Pf. |Municipal Code of Rhineland-Palatinate (Gemeindeordnung Rheinland-Pfalz) |
| GG |larger big city (große Großstadt) |
| GHG |greenhouse gas |
| gM | large medium-sized city (große Mittelstadt) |
| GO NRW |Municipal Code of North Rhine-Westphalia (Gemeindeordnung für das Land Nordrhein-Westfalen) |
| GO SH |Municipal Code of Schleswig-Holstein (Gemeindeordnung für Schleswig-Holstein) |
| GOA | variable of the AIF: goals |
| GV-ISys | German municipal directory information system (Gemeindeverzeichnis-Informationssystem) |
| HGO |Municipal Code of Hesse (Hessische Gemeindeordnung) |
| h_{MAX} |co-occurrences of adaptigation terms in city council resolutions |
| H_X | horizontal institutionalization |
| ICA | variable of the AIF: internal collective actor |
| IIA | variable of the AIF: internal individual actor |
| IPCC |Intergovernmental Panel on Climate Change |
| IPI | variable of the AIF: informal planning instrument |
| KA | German adaptation term (Klimaanpassung) |
| KF | climate impact (Klimafolge) |
| KG | smaller big city (kleine Großstadt) |
| KSG | German federal climate protection act (Bundes-Klimaschutzgesetz) |
| KSVG |Local self-government act of Saarland (Kommunaleselbstverwaltungsgesetz Saarland) |
| KV MV |Municipal Constitution of Mecklenburg Hither-Pomerania (Kommunalverfassung für das Land Mecklenburg-Vorpommern) |
| KVG LSA |Municipal Constitution of Saxony-Anhalt (Kommunalverfassungsgesetz des Landes Sachsen-Anhalt) |
| KWA |German adaptation term (Klimawandelanpassung) |
| M |mitigation |
| MA |adaptigation: the level of joint institutionalization of mitigation and adaptation |
| NGO | non-government organization |
| NKomVG |Municipal Consitution of Lower Saxony (Niedersächsisches Kommunalverfassungsgesetz) |
| ORG |variable of the AIF: organizational structure |
| QCA | Qualitative Comparative Analysis |

| | |
|------------------------|--|
| SächsGemO | <i>Municipal Code of Saxony (Gemeindeordnung für den Freistaat Sachsen)</i> |
| SK | <i>city climate (Stadtklima)</i> |
| SOP | <i>standard operating procedures</i> |
| ThürKO | <i>Municipal and County's Code of Thuringia (Thüringer Gemeinde- und Landkreisordnung - Thüringer Kommunalordnung)</i> |
| UNFCCC | <i>United Nations Framework Convention on Climate Change</i> |
| VIS | <i>variable of the AIF: visions</i> |

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List of publications

This thesis is based on three original research articles, published in peer-reviewed, international scientific journals. The articles are attached in Appendix A.

Paper 1: The Adaptation Institutionalization Framework

Göpfert, C., Wamsler, C., & Lang, W. (2019). A framework for the joint institutionalization of climate change mitigation and adaptation in city administrations. *Mitigation and Adaptation Strategies for Global Change*, 24(1), 1-21. doi:10.1007/s11027-018-9789-9, published online first on March, 1st 2018

Summary

Cities are key actors in reducing both the causes of climate change (mitigation) and its impact (adaptation), and many have developed separate mitigation and adaptation strategies and measures. However, in order to maximize outcomes, both scholars and practitioners are increasingly calling for more integrated and synergetic approaches. Unfortunately, related research remains scarce and fragmented, and there is a lack of systematic investigation into the necessary institutional conditions and processes. Against this background, this paper develops a framework to assess and support the joint institutionalization of climate adaptation and mitigation—here called adaptigation—in city administrations. This pioneering framework draws upon four key features of bureaucracies: organizational structure, visions and goals, actors, and technology and tools. Illustrated by pilot applications to the cities of Würzburg (Germany) and Mwanza (Tanzania), the framework provides a robust basis for future research, policy recommendations, and the development of context-specific guidelines for national and local decision-makers and officials. It highlights the importance of (i) clearly defined procedures for the implementation of adaptigation into urban planning processes (e.g., with the active involvement of stakeholders in the form of working groups or roundtable discussions), (ii) locally relevant goals and visions, established in collaboration with stakeholders, and (iii) the creation of mitigation and adaptation structures that are supported by the appropriate level of human resources, both within and outside city administrations. In this context, global, supranational, and national institutions play an important role in supporting institutionalization by providing targeted funding and promoting adaptigation, which requires the development of integrated goals, visions, and legislation.

Author's contribution

The first author Christian Göpfert developed the research questions and the related design, collected relevant theoretical and empirical literature, developed the heuristic framework, conducted expert interviews and the desk work with qualitative data analysis, notably using

MaxQDA; he wrote the manuscript under supervision of the co-authors. Both co-authors contributed with defining the research focus, scientific advice, structuring the article, reviewing content and analysis, and language editing.

Paper 2: Joint structures for joint action

Göpfert, C., Wamsler, C., & Lang, W. (2020) Enhancing structures for joint climate change mitigation and adaptation action in city administrations – empirical insights and practical implications. *City and Environment Interactions*, 8, 100052. doi: 10.1016/j.cacint.2020.100052

Summary

Increasing impacts from climate change have prompted international calls for the development of synergetic mitigation and adaptation policies and measures. While cities are seen as key actors in the implementation of related actions, there is a lack of scientific knowledge on the organizational conditions required to achieve this in practice. This paper addresses this gap. Specifically, it analyzes the impact of various organizational configurations on the initiation of joint mitigation and adaptation resolutions by city councils in Germany. The results demonstrate that the joint organizational institutionalization of mitigation and adaptation (i.e. joint departments) can be considered both as a necessary and significant prerequisite for joint implementation, unlike joint climate action plans. The developed methodology and identified conditions present an innovative way forward to assess and improve the initiation of integrated resolutions. This work contributes to organizational and climate policy integration theories, and can help cities worldwide to optimize their organizational configurations and enhance joint mitigation and adaptation actions.

Author's contribution

The first author Christian Göpfert developed the research questions and the related design, collected relevant theoretical and empirical information (notably via official city websites and “Ratsinformationssysteme”), conducted expert interviews, did the desk work with fuzzy-set Qualitative Comparative Analysis (QCA) and non-parametric tests, notably using the software packages R and fsQCA; he wrote the manuscript under supervision of the co-authors. Both co-authors contributed with defining the research focus, scientific advice, structuring the article, reviewing content and analysis, and language editing.

Paper 3: City advisory committees

Göpfert, C., Wamsler, C., & Lang, W. (2019). Institutionalizing climate change mitigation and adaptation through city advisory committees: Lessons learned and policy futures. *City and Environment Interactions*, 1, 100004. doi:10.1016/j.cacint.2019.100004

Summary

Municipal advisory committees are becoming increasingly influential in guiding decision-making processes that address climatic issues. According to the Adaptation Institutionalization Framework (included in the recent IPCC report), the implementation of such participatory structures is vital for the effective, joint institutionalization of climate change mitigation and adaptation. However, there is a lack of empirical evidence to support this claim. Against this background, this paper tests the Adaptation Framework using the example of municipal advisory committees in Germany. Based on a review of 107 cities, and social network analyses of 20 cities, the article presents a typology of advisory committees, examine their stakeholder constellations, and assesses how they influence municipalities' capacity to institutionalize joint mitigation and adaptation goals in sector policy and planning. The results and the developed social network analysis approach can be used by cities worldwide to systematically analyze and enhance participation structures to address climate change more effectively. We conclude with some recommendations for future research and policy.

Author's contribution

The first author Christian Göpfert developed the research questions and the related design, collected relevant theoretical and empirical literature (notably statutes of city advisory committees and their actors' composition), conducted expert interviews, did the desk work with qualitative data analysis and social network analysis, notably using MaxQDA and Python; he wrote the manuscript under supervision of the co-authors. Both co-authors contributed with defining the research focus, scientific advice, structuring the article, reviewing content and analysis, and language editing.

1. Introduction

“We need enough mitigation to avoid the unmanageable, and enough adaptation to manage that which is unavoidable.” – Dr. Rosina Bierbaum, University of Michigan

1.1. Global climate change and local responses

A simple chemical formula (CO₂) has mobilized a putatively politically-apathetic youth, and initiated a global movement called “Fridays for Future”. The underlying reason for this success story may be that CO₂ is a metaphor for a global challenge that the whole of mankind must face, and which will continue to change our world for decades or centuries—global warming. Anthony Leiserowitz, Director of the Yale Program on Climate Change Communication concisely highlights five main aspects of the current discourse on climate change: “It’s real. It’s us. It’s bad. Scientists agree. There’s hope”.

Climate change is a reality, it can no longer be considered as a political issue for future generations. It is already happening: human-induced warming on a global scale reached approximately 1°C above pre-industrial levels in 2017, and it is very likely that it will continue to increase at a rate of 0.2 °C per decade (Allen et al., 2018). In 2015, a milestone was set to strengthen the global response to increasing climate change. The Paris Agreement was adopted at the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) by 195 nations, and entered into force on 4 November 2016. In Article 2a, the parties agreed to “holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change” (United Nations, 2015).

At the invitation of the UNFCCC, the Intergovernmental Panel on Climate Change (IPCC) drafted a Special Report on the impacts of global warming of 1.5°C above pre-industrial levels (Allen et al., 2018). The latter report presents and discusses the implications of different, ambitious greenhouse gas emission pathways to reach this goal. They range from scenarios in which there is early stabilization of the global temperature at, or below 1.5 °C, to others where the global temperature temporarily exceeds (overshoots) this mark, with more or less predictable comeback in the future, based on the use of technologies to reduce atmospheric greenhouse gases (De Coninck et al., 2018; Rogelj et al., 2018). Other scenarios, such as the “carbon law”, which seeks to halve emissions every decade (Rockström et al., 2017), or the German legislative mechanism that sets annual emission budgets (§ 4 KSG; Scharlau, von Swieykowski-Trzaska, Keimeyer, Kliniski, & Sina, 2020) are also discussed. It is clear that the negative impacts, and socio-economic and ecological

damage caused by advancing climate change, are directly related to the emission pathways adopted by our world in the next few decades.

But there is hope. To effectively minimize damage and manage the risks of climate change, there are two key, complementary strategies that are inextricably linked (IPCC, 2014; King, 2004; Rahmstorf & Schellnhuber, 2018; Wilbanks, 2005). The first is to mitigate climate change by reducing greenhouse gas emissions, and the second is to adapt the socio-economic system to the unavoidable consequences of climate change by reducing the system's vulnerability to extreme weather events, like heat waves, drought, floods, heavy rain, or storms. The IPCC defines mitigation, in general, as "a human intervention to reduce the sources or enhance the sinks of greenhouse gases (GHGs)" (IPCC, 2014, p. 125), and adaptation as "the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities" (IPCC, 2014, p. 118). The Fourth IPCC Assessment Report makes it clear (with high confidence) that effective climate policy "involves a portfolio of diverse adaptation and mitigation actions" (Klein et al., 2007, p. 747).

Despite the relevance of climate change at the global level, action at local level, notably cities or urban areas, is also seen as key (Bausch & Koziol, 2020; De Coninck et al., 2018; Fuhr, Hickmann, & Kern, 2018; Romero-Lankao, 2012; UN-Habitat, 2011b, 2015; Wamsler, 2014; World Bank, 2010). This is because urbanization has intensified carbon emissions (creating a need for mitigation), and urban areas are more vulnerable to the social, economic and technical impacts of climate change, creating a need for adaptation (Castán Broto & Bulkeley, 2013; De Sherbinin, Schiller, & Pulsipher, 2007; Rosenzweig, Solecki, Hammer, & Mehrotra, 2010; UN-Habitat, 2010, 2011a). A clear illustration is dense urban areas, which suffer from the heat island effect (Bhargava, Lakmini, & Bhargava, 2017; Gartland, 2008), as opposed to surrounding rural settings.

In 2018, 55 % of the world's population lived in urban areas, and this number is likely to increase (United Nations, 2018, 2019). While most research has focused on "world" or "global" cities and megacities, there is a general consensus in the literature that cities with 50,000 to 1 million inhabitants (so called medium-sized, secondary, intermediate or intermediary cities) should become the focus of climate change mitigation and adaptation discourse and action. Thus, there has been an increase in empirical studies of this category, extending to smaller cities (Bausch & Koziol, 2020; Lang et al., 2018; Nel, Marais, & Donaldson, 2016; Reckien et al., 2014; Reckien, Flacke, Olazabal, & Heidrich, 2015; Thieken et al., 2018; UCLG, 2016; UN-Habitat, 2011a; United Nations, 2016). Large cities and megacities have often pioneered the institutionalization of climate mitigation and adaptation policies (Anguelovski & Carmin, 2011), while intermediary cities, which make up the majority

of the world's cities lack advice and guidance. Thus, as described in Section 2.2, the empirical focus of this thesis is on German cities with between 30,000 to 1,400,000 inhabitants.

Cities have the potential to implement effective mitigation and adaptation measures, as they are in direct contact with relevant local actors. Beyond municipalities, the “city society” (NGOs, corporations, community groups, inhabitants, etc.) is playing an increasingly important role in climate change planning (Brink & Wamsler, 2017; Castán Broto & Bulkeley, 2013; Wamsler, 2017). The local level represents the interface between the city society and public decision-makers, and joint efforts can enhance institutional capacities to act (Swart & Raes, 2007). In recent years, cities have expanded their knowledge and developed capacities that have enabled them to establish mitigation and adaptation as independent policy fields, and to integrate and mainstream them in sectoral strategies and daily work (Deutsches Institut für Urbanistik - Arbeitskreis Kommunaler Klimaschutz, 2017; Kern, Niederhafner, Rechlin, & Wagner, 2005; Runhaar, Wilk, Persson, Uittenbroek, & Wamsler, 2018; Wamsler, 2014, 2015a; Wamsler, Brink, & Rivera, 2013; Wamsler & Pauleit, 2016).

The main fields of action are twofold:

- (1) Mitigation: examples include: climate-friendly energy supply and consumption (especially the three-step approach: reduction, efficiency and renewable energies); reducing motorized urban transport; shifting to pedestrian/ cycle traffic or public transport; promoting electric/ low carbon mobility; energy-efficient materials and design in the built environment; solid waste and wastewater management; sustainability; nutrition; and in the actual climate neutrality discussion also generation, preservation and restoration of carbon sinks (for instance, Becker, Clarus, Schmidt, & Winter, 2009; Bulkeley & Kern, 2006; Castán Broto & Bulkeley, 2013; Deutsches Institut für Urbanistik, 2018; Göpfert, 2014; Kern et al., 2005; Romero-Lankao, 2012; UN-Habitat, 2011a).
- (2) Adaptation: examples include: human health; construction; water management; coastal and marine protection; soil; biological diversity; green infrastructure; ecosystem services; nature-based solutions; agriculture; forestry and forest management; fishery; energy conversion; transport and supply; financial services; transport and transport infrastructure; trade and industry; tourism; and cross-cutting topics such as spatial, regional and physical development, planning, civil protection and disaster management (Castán Broto & Bulkeley, 2013; Deutscher Städtetag, 2012; Inturri & Ignaccolo, 2011; Lang et al., 2018; Ritter, 2007; Schüle et al., 2016; The Federal Government of Germany, 2008; UN-Habitat, 2011a; Wamsler, 2015a).

1.2. Mitigation first, adaptation second?

Historically, municipalities and academia have focused on climate change mitigation (Alber & Kern, 2008; Klein, Schipper, & Dessai, 2005), with only a few exceptions (Castán Broto & Bulkeley, 2013). In Germany, cities have been engaged in mitigation-related activities for decades, for instance, (cost-)efficiency measures applied to the local energy supply. Mitigation, under this specific jargon, “has been established institutionally already for years at a municipal level” (Schüle et al., 2016, p. 21), notably through the development of municipal climate mitigation concepts (BMVBS / BBSR, 2009; Göpfert, 2014). The latter process began approximately 20 years ago, with the publication of the initial guideline *Klimaschutz in Kommunen* (Deutsches Institut für Urbanistik, Institut für Energie- und Umweltforschung, & Büro für Kommunal- und Regionalplanung, 1997). Currently, all 107 German independent cities (Section 2.2) have adopted such concepts (an overview is provided in Paper 2, Appendix A.2, Appendix B.2: Table 12), mainly driven by the so-called *Kommunalrichtlinie*, a federal funding program that was first established in 2008 (BMU, 2008).

Following calls that it should play a bigger role in climate policy (Pielke, 1998), adaptation - as a specific jargon and comprehensive strategy - became the focus, with the publication of the IPCC Third Assessment Report (IPCC, 2001; Martens, McEvoy, & Chang, 2009; Säwert, 2016). However, at the municipal level, sectoral aspects of adaptation already have a long history (BMVBS / BBSR, 2009). They include, for example, flood prevention, urban greening and spatial climate-ecological analyses (the city of Würzburg has had such a map since the late 1970s).

The specific issue of adaptation has emerged in recent years in municipal policy (Alber & Kern, 2008; Anguelovski & Carmin, 2011; Die Bundesregierung, 2011; Knieling & Roßnagel, 2014; Langlais, 2009) and planning practice (Davoudi, Crawford, & Mehmood, 2009; Wamsler et al., 2013). Notably, in Germany, “climate change mitigation is paving the way for climate change adaptation” (Wamsler & Pauleit, 2016, p. 78). However, according to a survey of 20 German municipalities, this “has – until date – no key position regarding the question of development planning and policy [and has to be practiced] ‘under cover’ or according to a certain chronology (at first mitigation, then adaptation)” (Schüle et al., 2016, p. 25). But there are also other perspectives: “In studying how different administrations have acted with regard to climate change there has recently been a dramatic emphasis on adaptation policy. This comes after years of focusing almost exclusively on mitigation activity” (Langlais, 2009). Experience indicates that the importance given to, and the implementation of adaptation in cities may be heavily dependent on the country-specific and local political setting, and their specific vulnerabilities (e.g., Wamsler & Pauleit, 2016).

1.3. Joint perspectives on mitigation and adaptation

Despite mitigation and adaptation having the same goal of minimizing the damage caused by climate change through either reducing causes or climate risks, there is a lack of perspectives that consider them jointly. Mitigation and adaptation have generally been considered as different strategies with regard to the spatial scale, socio-economic sectors, the time scale and beneficiaries (Klein et al., 2005; Swart & Raes, 2007; Wilbanks, 2005). This “mitigation-adaptation dichotomy” (Biesbroek, Swart, & van der Knaap, 2009) has many opposing facets. For example, mitigation is said to primarily address causes, whereas adaptation primarily addresses the consequences of climate change. Adaptation is “primarily oriented to address localized impacts of climate change, while mitigation aims to address the impacts on the climate system” (IPCC, 2001, p. 96). Mitigation “represents activities to *protect nature from society* while adaptation constitutes ways of *protecting society from nature*” (Stehr & Storch, 2005, p. 537). Mitigation is considered to be a discourse of innovation, while adaptation is focused on risk reduction (Schüle, Liesenfeld, & Madry, 2015).

On the other hand, they are often declared to be two sides of the same coin (Ritter, 2007), and the exploration of synergies, co-benefits, complementarities, constraints and trade-offs is gaining attention in both science and practice (Grafakos, Trigg, Landauer, Chelleri, & Dhakal, 2019; Klein et al., 2005; Landauer, Juhola, & Klein, 2018; Landauer, Juhola, & Söderholm, 2015; Moser, 2012; Swart & Raes, 2007; Wamsler & Pauleit, 2016; Wilbanks, Leiby, Perlack, Ensminger, & Wright, 2007; Wilbanks & Sathaye, 2007; Zhao et al., 2018). The IPCC Fourth Assessment Report was a turning point, as it explicitly stressed the importance of joint strategies and measures, and presented four types of inter-relationships between mitigation and adaptation actions (Klein et al., 2007, p. 750):

- “Adaptation actions that have consequences for mitigation,
- Mitigation actions that have consequences for adaptation,
- Decisions that include trade-offs or synergies between adaptation and mitigation,
- Processes that have consequences for both adaptation and mitigation.”

Shortly afterwards, the German Strategy for Adaptation to Climate Change highlighted the need for synergies, giving examples of measures such as building insulation, which aim to reduce energy demand in winter, but also protect structures from heat in summer (The Federal Government of Germany, 2008). According to the IPCC Fifth Assessment Report, we can be very confident that “significant co-benefits, synergies and trade-offs exist between mitigation and adaptation” (IPCC, 2014, p. 80).

Given that mitigation and adaptation have developed along different temporal and thematic pathways in municipalities, it is not surprising that they have tended to be discussed and implemented as separate strategies, both in science (Huq & Grubb, 2007; Säwert, 2016; Schüle et al., 2015; Stehr & Storch, 2005) and practice (Klein et al., 2007; Säwert, 2016; Wiegand, 2010), “leaving any potential links between the two relatively unexplored.” (Jones, Dettmann, Park, Rogers, & White, 2007, p. 686). As the results of this thesis show, most German cities have separated climate change mitigation and adaptation concepts (Paper 2, Appendix A.2), while only a few have joint concepts, or enhanced mitigation concepts with elements of adaptation. One example is, for instance, the climate protection concept of the city of Würzburg (Karg et al., 2012). While knowledge about synergies and complementarities is still growing (Dietrich & Göpfert, 2014; Dietrich & Schiffmann, 2015; Grafakos et al., 2019; Huq & Grubb, 2007; Jolk, 2015; Landauer et al., 2018; Lang et al., 2018; Pasimeni, Valente, Zurlini, & Petrosillo, 2019; Säwert, 2016; Schüle et al., 2016; The Federal Government of Germany, 2008), the institutional setting of city administrations, which could support joint measures, remains largely unexplored. Yet there is potential for improvement. While, on a national scale, mitigation and adaptation are predominantly institutionalized as separate responsibilities (i.e., by different federal ministries), city administrations are responsible for both issues (Klein et al., 2007, p. 753).

Early research on municipal strategies, policies and measures has revealed that – among other insights – institutional capacity (e.g., resources, knowledge and organizational structures) along with individual and policy entrepreneurs are important for effective action at local level (Bulkeley, 2010; Castán Broto & Bulkeley, 2013). The need for joint perspectives, at measure, conceptual and institutional levels, can only increase, given the challenge of carbon neutrality. Recently, the Federal Republic of Germany has implemented climate mitigation legislation (the Bundes-Klimaschutzgesetz, KSG), which binds the carbon neutrality goal of the Paris Agreement into German law (Scharlau et al., 2020). Simultaneously, from a bottom-up perspective, an increasing number of cities are setting ambitious goals – typically to be carbon neutral by 2050, and a climate emergency has been declared (although intense controversy surrounds the use of the term ‘emergency’ – Notstand – in the light of German history). Both the KSG and climate emergency debates focus on mitigation – at first sight. But the objective of carbon neutrality requires – in contrast to earlier GHG-reduction goals – the preservation and generation of carbon sinks (Klein et al., 2005), which also enhances adaptive capacity.

1.4. Research objective

The thesis' main topic is to increase knowledge of the (joint) institutionalization of climate change mitigation and adaptation in municipal administrative structures. The aim is to provide knowledge and tools that can enhance the ability of city administrations to implement joint measures. It addresses the lack of scientific and practical knowledge on institutional preconditions in city administrations that can support joint mitigation and adaptation action. Analogically to this, Bridges (2016, p. 171) points out the importance of related information in regard to sustainability: "Knowledge of which institutional practices are responsible for sustainable outcomes can be useful to local decision makers in designing policies and development plans that influence and govern action toward sustainability in complex urban systems". To date, as noted above, the focus in academia – and very occasionally in practice – has been on the realization of synergetic or complementary measures that have benefits for both mitigation and adaptation.

1.5. Research hypothesis and overall approach

Against this background, the main research hypothesis is that the joint institutionalization of mitigation and adaptation is a prerequisite for the implementation of joint measures by city administrations (Figure 1). This hypothesis is based on an organizational process model, which assumes a logic of appropriateness in a city administration's decision-making (Section 2.1). To define and operationalize the concept of joint institutionalization and implementation, the thesis draws heavily on, and refines the concept of 'adaptigation', initially coined by Langlais:

"Adaptigation is a response to climate change that integrates a focus on adaptation with a focus on mitigation, to avoid conflicts and create synergies" (Langlais, 2009).



Figure 1 Main research hypothesis

However, to be testable, the hypothesis needs further clarification and concretization. An innovative approach was needed:

- to systematically assess the institutionalization of mitigation and adaptation in city administrations, and the implementation of measures; and
- to analyze interdependencies between the institutionalization and implementation of measures (Figure 2).

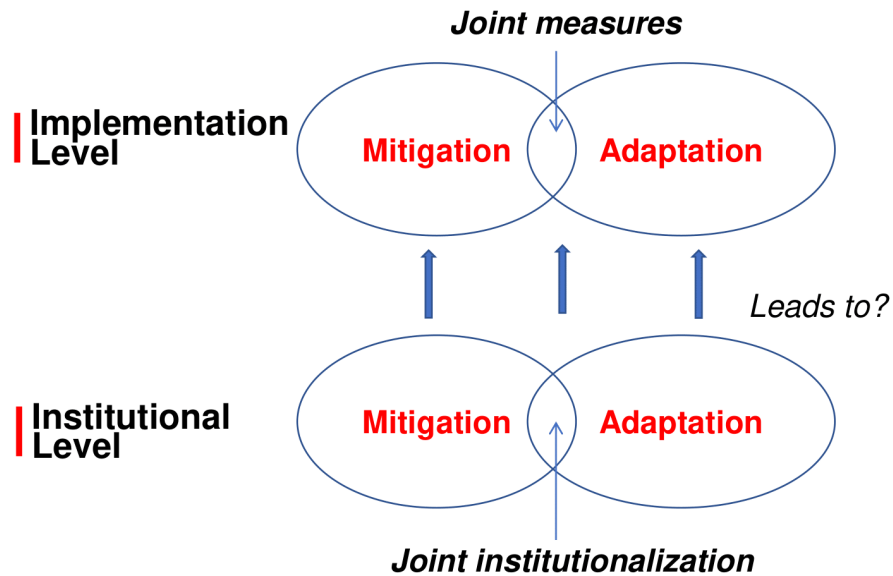


Figure 2 Operationalizing the main research hypothesis

First, the notion of joint institutionalization and the joint implementation of mitigation and adaptation has to be defined: the Adaptation Assessment (at the institutional level), and the co-occurrence of terms associated with adaptation in city council resolutions (h_{MAX}) as a proxy for measuring implementation (Sections 3.1 and 3.2). Second, a heuristic, analytical framework is needed to understand and assess the institutionalization of adaptation in city administrations. This takes the form of the Adaptation Institutionalization Framework (Section 3.1, Paper 1, Appendix A.1). Third, operationalizing, adjusting and testing the main research hypothesis requires the application of the Framework, the Adaptation Assessment, and h_{MAX} (Section 3.2, Paper 2, Appendix A.2). Finally, to demonstrate the practical and scientific relevance of the developed instruments, the framework was used in a specific application to analyze and enhance formal collaboration structures, namely municipal advisory committees (Section 3.3, Paper 3, Appendix A.3).

The Framework and its applications bridge the gap of “tools for integrated climate policy assessments that allow testing of possibilities to implement adaptation and mitigation in tandem” (Landauer et al., 2015, p. 515). This point is also noted in the IPCC Fourth Assessment Report (Klein et al., 2007, pp. 769-770):

“The literature does provide a growing number of examples and case studies (...) but, unlike the emerging literature on global policy and institutions, it does not yet discuss the role of policies and institutions vis-à-vis inter-relationships between adaptation and mitigation, nor does it discuss the implications of potential inter-relationships on policy and institutions. (...) Analytical frameworks for evaluating the links between adaptation and mitigation are inadequate (...). A suite of frameworks may be necessary for particular stakeholders and levels of decision-making.

Decision frameworks relating adaptation and mitigation (separately or conjointly) need to be tested against the roles and responsibilities of stakeholders at all levels of action”.

Furthermore, the IPCC Special Report on global warming of 1.5 °C explicitly mentions a “lack of insight on what can enable changes in adaptation and mitigation behavior in organizations and political systems” (De Coninck et al., 2018, p. 391).

Beyond mitigation and adaptation, there are interdependencies with other sectoral objectives, such as controlling air pollution, where measures are intertwined with climate change (Beismann & Göpfert, 2019). Although this thesis focuses mainly on dedicated mitigation and adaptation structures, strategies and measures, other sectors are considered in the context of a discussion of climate policy integration and mainstreaming (Sections 2.1 and 3.1, Paper 1, Appendix A.1.) and, notably, a discussion of mainstreaming through collaboration structures, such as committees (Section 3.3, Paper 3, Appendix A.3).

2. Theories and methods

This section briefly presents the main theoretical and methodological approaches of the thesis. A thorough discussion of specific theories and methods is provided in the published articles (see List of publications and Appendix A).

Section 2.1 outlines general and climate-related organizational theories and frameworks, which serve to identify the features and variables within city administrations that are crucial for institutionalizing mitigation and adaptation. The main research hypothesis assumes that decision-making in city administrations follows a “logic of appropriateness”, where the institutional setting is a key prerequisite for the implementation of measures. Recent empirical studies by Reckien et al. (2015, 2018) underline this theoretical approach: “Climate change planning in European cities is therefore often determined by local institutional capacity rather than by a proactive response to anticipated future needs” (Reckien et al., 2018, p. 209).

Section 2.2 describes the socio-geographical scope of the thesis, and **Section 2.3** introduces the overall data collection and analysis methods, which are presented in more detail in the published articles. Table 1 gives a brief overview of the methodology and data sources; these are linked to the research goals (Section 1.5) and the theoretical background (Section 2.1).

The methodological approach to analyzing the institutionalization of mitigation and adaptation in city administrations (i.e., the Adaptation Assessment), and the implementation of (joint)

measures (i.e., h_{MAX}), are specific results of the thesis. Hence, these concepts are described in the results section (Sections 3.1. and 3.2).

Table 1 Overview of the theoretical and methodological approaches used in the published papers (Appendix A)

| Paper 1 | |
|-------------------------------|---|
| Goal | Understand and assess the joint institutionalization of mitigation and adaptation |
| Theoretical Background | Organizational theories (logic of appropriateness, organizational process model, organized anarchy, coalition theory, organizational culture, institutionalism) and climate-related frameworks (environmental / climate policy integration and mainstreaming), set theory, Boolean algebra |
| Methods | Structured and guided expert interviews, document analysis, Qualitative Content Analysis using MaxQDA (VERBI Software, 2018), set theory |
| Data sources | Municipal officials, theoretical and empirical literature (studies and guidelines), participation in the mitigation and adaptation work of the cities of Würzburg, Germany and Mwanza, Tanzania |
| Paper 2 | |
| Goal | <i>Scientific application:</i> Test the main research hypothesis |
| Theoretical Background | The Adaptation Institutionalization Framework (variables <i>ORG</i> , <i>ECA</i> , <i>IPI</i>), set theory, Boolean algebra |
| Methods | Expert interviews (email and phone), document analysis, fuzzy-set Qualitative Comparative Analysis (fsQCA), Kruskal-Wallis test using R statistical software |
| Data sources | Official websites of 72 cities (assessing the variables <i>ORG</i> , <i>ECA</i> , and <i>IPI</i>); measuring co-occurrences of mitigation and adaptation terms in city council resolutions from 01.01.2015 to 30.04.2019), additional official documents for fsQCA on 15 cities, municipal officials |
| Paper 3 | |
| Goal | <i>Practical application:</i> Assess and enhance the joint institutionalization of the variable <i>ECA</i> |
| Theoretical Background | The Adaptation Institutionalization Framework (variable <i>ECA</i>), organizational culture, network and coalition theories, graph theory |
| Methods | Expert interviews (email and phone), document analysis, Qualitative Content Analysis using MaxQDA, Social Network Analysis using Python and Gephi software |
| Data sources | 107 cities (618 documents from 594 municipal advisory committees), network analysis of 19 cities with climate-specific committees, municipal officials |

2.1. Institutionalizing adaptation

To initially understand and assess the (joint) institutionalization of mitigation and adaptation in city administrations, the thesis develops an analytic framework (Section 3.1). This framework is based on a property space (Kelle & Kluge, 2010; Kluge, 2000; Kuckartz, 2014b; Lamnek, 2005). Organizational features and variables are deduced from organization theories, climate-related frameworks and field-specific empirical studies (Figure 3).

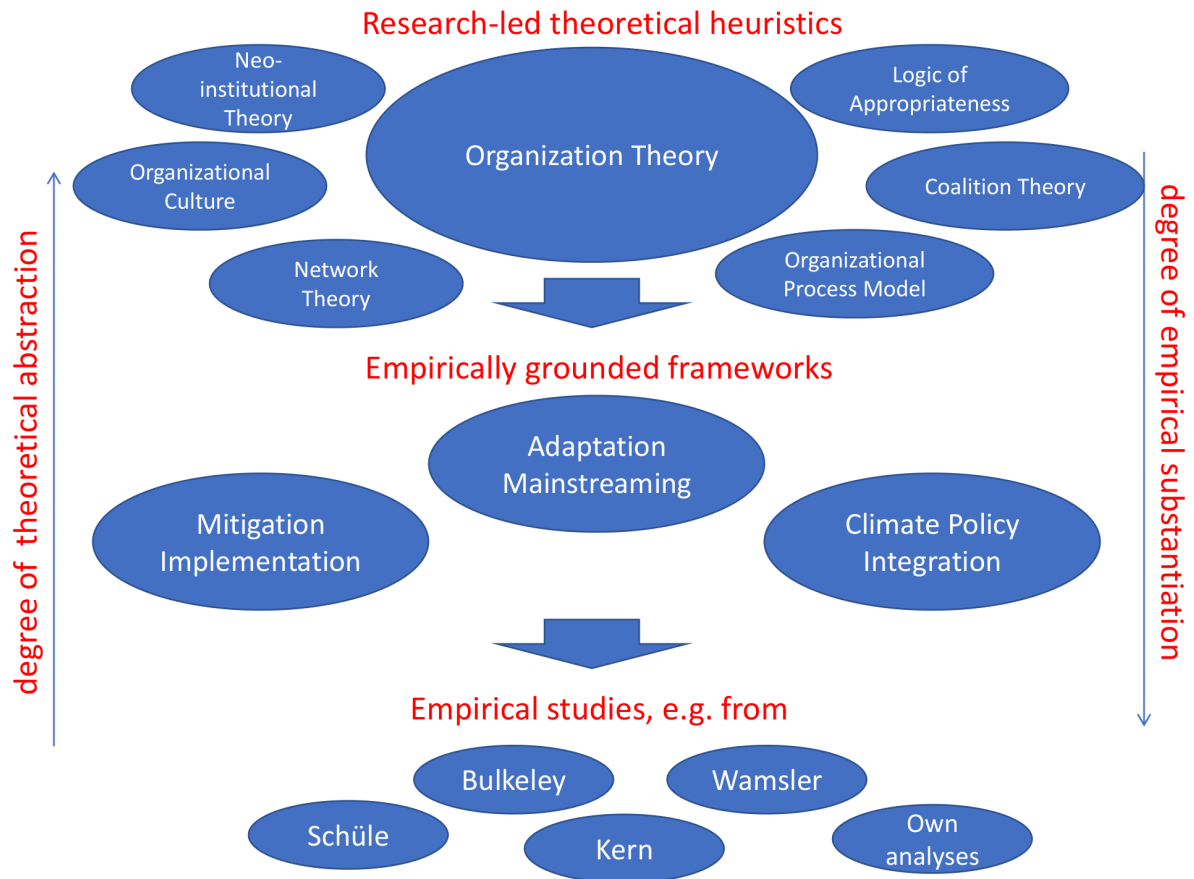


Figure 3 The theoretical and empirical background for constructing the analytic framework.

More specifically, the research-led heuristic setting is based on:

- (1) institution theory (Czada, 1995; Gukenbiehl, 2002; North, 1991; Söderberg, 2011; Wolf, 2005; Zucker, 1987), partially supported by aspects of actor-oriented institutionalism (Scharpf, 2006) and the capacity-building approach (Göpfert, 2014; Jänicke, Kunig, & Stitzel, 2003). In this context, institutions are understood as regulatory and normative systems, with formal and informal rules and duties that structure and guide social interaction.
- (2) elements of organization theory, in particular, a formal process model with standard operating procedures (SOP), and concepts of the logic of appropriateness, organized anarchies, garbage cans and multiple streams (for instance, Allison, 1969; Kingdon, 1995; James G March, 1999; James G. March & Olsen, 2008; McFarland & Gomez, 2016; W. R. Scott, 2003; Thoenig, 2011; van Waarden, 2009). SOP (e.g., organizational routines that result in a city council resolution) provide a blueprint for institutionalized organizational processes: “Institutionalization occurs whenever there is a reciprocal typification of habitualized actions by types of actors. (...) The institution posits that actions of type X will be performed by actors of type X” (Berger & Luckmann, 1967, p. 72).

(3) an organizational model based on Leavitt's diamond (Leavitt, 1965; McFarland & Gomez, 2016; W. R. Scott, 2003), combined with the general principles of strategic management used by German municipalities (Kommunale Gemeinschaftsstelle für Verwaltungsmanagement, 2010), and aspects of the systemic organization of administrations (Pippke, 2014),

The goal of institutionalizing climate mitigation and adaptation in municipal bodies is to legitimize and incorporate them, until they become a permanent, consistent element of organizational culture (DiMaggio & Powell, 1983; W. R. Scott, 2003; van Waarden, 2009). The aim is to anchor them as “institutionalized facts, accepted without conscious thought” (Wolf, 2005, p. 185) – deeply internalized, in the best case, they are automatically considered in organizational structures and decision-making processes. In an organizational process model, decisions are made according to a logic of appropriateness, and institutions play a fundamental role: “To act appropriately is to proceed according to the institutionalized practices of a collectivity (...)” (James G March & Olsen, 2011, p. 479). According to van Waarden (2009), the guiding principles for social action are norms, beliefs, and matching situations to appropriate roles and rules. In this regard, institutionalization means constructing norms, rules and roles that will be adopted. Following a logic of appropriateness, people act because of, and in the way, organizational institutions expect them to, in a specific role or situation (James G March & Olsen, 2011; McFarland & Gomez, 2016). Institutionalized mitigation and adaptation should, therefore, orient and guide public servants and political decision-makers how to consider these issues in their daily work.

This overall theoretical context adopts relevant aspects of (ecosystem-based) adaptation mainstreaming frameworks (Klein et al., 2005; Wamsler, 2015a, 2015b; Wamsler, Luederitz, & Brink, 2014; Wamsler & Pauleit, 2016) and the climate policy integration framework (Ahmad, 2009; Beck, Kuhlicke, & Görg, 2009; Mickwitz et al., 2009; Rietig, 2012), which is a thematical modification of the environmental policy integration approach (Lafferty & Hovden, 2003; Söderberg, 2011). Additional insights were gained from interviews with municipal officials, and field-specific studies regarding the integration of mitigation and adaptation in local administrations (just to name a few: Bulkeley, 2010; Bulkeley, Schroeder, Janda, & Zhao, 2009; Kern et al., 2005; Schüle et al., 2015; Schüle & Lucas, 2011). These sources helped to foster and clarify the analytical structure of the property space.

This theoretical background established the conceptual framework for developing the Adaptation Institutionalization Framework (AIF). The AIF is presented in detail in **Paper 1** (Section 3.1, Appendix A.1). It assumes an organizational process model (Allison, 1969) that considers different departments within a city administration as partly independent and sometimes parochial actors, with their own preferences and goals. They act in the rule-

structured framework of, and are coordinated by, the governing organization, following standard, rule-based operating procedures and mandatory organizational routines, rather than choosing the best, rational option on a case-by-case basis. In contrast to rational choice decisions, organizations that act in a logic of appropriateness make decisions by matching “situations and identities” (James G March, 1999, p. 21), guided by institutionalized rules and roles. In addition to the holistic institutionalization of climate issues in the administration, the model also focuses on individual administrative units (departments), and how they integrate climate policies. This comprises:

- implementing climate-related goals, or enhancing specific sectoral goals with climate-related issues,
- adjusting an appropriate structure,
- involving relevant stakeholders in working practices and decision-making processes (policy entrepreneurs such as climate mitigation or adaptation officers, or external stakeholders such as special interest groups or specialized climate councils), and
- implementing field-appropriate climate-related issues in the technology or outputs (e.g., integrating adaptation issues into urban land-use planning by the planning department, or integrating mitigation issues into vehicle procurement by the general procurement department).

Given the assumed importance of SOP, and the organizational localization of mitigation and adaptation issues, **Paper 2** (Section 3.2, Appendix A.2.) hypothesizes that there is an association between joint organizational responsibility or joint climate concepts (in the form of SOP), and the implementation of joint measures, represented by the decisions of the city council.

Elements of network and coalition theories (Hula, 1999; James G March, 1999; McFarland & Gomez, 2016; W. R. Scott, 2003) are used to exemplify the application of the AIF: in particular, the investigation of municipal advisory committees in Germany (**Paper 3**, Section 3.3, Appendix A.3). Participatory structures can play a key role in implementing adaptation and mitigation on a local level (De Coninck et al., 2018; Swart & Raes, 2007). However, and more specifically, the analyses presented in Paper 3 draw on elements of social network analysis, network learning, governance network theory, and the concepts of homophily and the strength of weak ties (Jackson, 2008; Klijn & Koppenjan, 2012; Knight, 2002; Lazer, 2011; McPherson, Smith-Lovin, & Cook, 2001; Rürup, Rübken, Emmerich, & Dunkake, 2015; Schnegg & Lang, 2002; Schneider, 2009; J. Scott, 1988, 2017; Serdült, 2002; Ward, Stovel, & Sacks, 2011; Ziervogel, Pasquini, & Haiden, 2017).

A more thorough description of the theoretical background is provided in the respective Papers (Appendix A).

2.2. The empirical scope: 107 cities

Socio-geographically, the investigation primarily focuses on 107 independent German cities that are not federal city states (*kreisfreie Städte*). The empirical focus is on Germany because it is both affected by climate risks, notably increasing heat waves, the country placed third in the 2018 Global Risk Index (Eckstein, Künzel, Schäfer, & Wings, 2019), and is considered as a forerunner in environmental governance (Jordan & Lenschow, 2000; Jost & Jacob, 2004), with nation-wide climate change mitigation targets, and increasing adaptation efforts (BMUB, 2016; Deutsches Institut für Urbanistik, 2015, 2018; Göpfert, 2014; Hasse & Willen, 2019; Scharlau et al., 2020; The Federal Government of Germany, 2008).

The following sections briefly introduce the different types of municipalities (Table 2), and justify the selection of independent cities as the unit of analysis (Sections 2.2.1 and 2.2.2). The final set of cities is shown in Section 2.2.3.

2.2.1. Independent cities

German cities can be differentiated by the scope of their responsibilities, and their legal and financial powers. In general, they are either independent (i.e., not part of a district, *kreisfrei*), or subordinate to a district (*kreisangehörig*) (Burgi, 2015; Knemeyer, 2004). Independent cities take on the responsibilities of both municipalities and districts (e.g., Art. 9 Abs. 1 BayGO). They act as *Kreisverwaltungsbehörden*, and are responsible for communal tasks such as site planning, and other services of general interest. The latter responsibilities are transferred to them by the state, and are usually institutionalized in a district administrative office (*Landratsamt*). An example is the enforcement of legal obligations through the lower nature conservation authority, which is implemented in the administration of independent cities, (e.g., Art. 43 Abs. 2 Nr. 3 BayNatSchG). Non-independent cities are limited to communal actions; unlike independent cities, a separate district administrative office acts as the subordinate state authority (e.g., Art. 4 BayLKrO).

Table 2 lists the different types of cities (based on Burgi, 2015). As noted above, independent cities are legally termed *kreisfreie Städte* or – in the federal state of Baden-Württemberg – *Stadtkreise*. Furthermore, the regional authorities of Hannover and Saarbrücken (Region Hannover and Regionalverband Saarbrücken) are considered as independent cities (Section 2.2.2). According to the federal structure, non-independent cities can be termed as *Gemeinde*, *Samtgemeinde*, *Einheitsgemeinde*, *Amtsangehörige Gemeinde*, *amtsfreie Gemeinde* (town), *Mittlere Stadt*, *Mittelstadt* (a medium-sized city),

Große Kreisstadt, Große Stadt, Große selbständige Stadt (a major regional city), and Stadt mit Sonderstatus (a city with a special status).

Table 2 Types of German municipalities. Stadtkreise, which only exist in Baden-Württemberg, are legally equivalent to independent cities (§ 3 Abs. 1 GemO BW).

| State | Independent city | Non-independent city | | Legislation |
|------------------------------|---|-----------------------------|--------------------|---------------------|
| Baden-Württemberg | Stadtkreis | Große Kreisstadt | Gemeinde | § 3 GemO BW |
| Bavaria | Kreisfreie Stadt | Große Kreisstadt | Gemeinde | Art. 5, 5a BayGO |
| Brandenburg | Kreisfreie Stadt | Große Stadt | Gemeinde | § 1 BbgKVerf |
| Hesse | Kreisfreie Stadt | Stadt mit Sonderstatus | Gemeinde | § 4a HGO |
| Mecklenburg-Hither Pomerania | Kreisfreie Stadt | Große Stadt | Gemeinde | § 7 KV MV |
| Lower Saxony | Kreisfreie Stadt, Region Hannover | Große selbständige Stadt | (Samt) Gemeinde | § 14 ff. NKomVG |
| North Rhine-Westphalia | Kreisfreie Stadt | Große und Mittlere Stadt | Gemeinde | § 4 GO NRW |
| Rhineland-Palatinate | Kreisfreie Stadt | Große Stadt | Gemeinde | § 6 f. GemO Rh.-Pf. |
| Saarland | Kreisfreie Stadt, Regionalverband Saarbrücken | Mittelstadt | Gemeinde | § 4 KSVG |
| Saxony | Kreisfreie Stadt | Große Kreisstadt | Gemeinde | § 3 SächsGemO |
| Saxony-Anhalt | Kreisfreie Stadt | Einheitsgemeinde | Gemeinde | § 12 KVG LSA |
| Schleswig-Holstein | Kreisfreie Stadt | Amtsangehörige Gemeinde | Amtsfreie Gemeinde | § 48 f. GO SH |
| Thuringia | Kreisfreie Stadt | Große Stadt | Gemeinde | § 6 ThürKO |

2.2.2. Other cities

The following cities are, by legal definition, not independent cities. But they are considered in this thesis, as they are on par with independent cities, for the reasons given below:

- **Saarbrücken.** The state capital of the Saarland is a city within the regional authority of Saarbrücken, and – strictly speaking – not an independent city (§ 4 Abs. 2, 4 KSVG). Nevertheless, it has the same range of responsibilities as independent cities (§§ 8, 9 Abs. 1 Halbsatz 1 KSVG).
- **Hannover.** Under § 15 Abs. 1 Halbsatz 1 NKomVG, the state capital of Lower Saxony is subordinated to a region. However, § 15 Abs. 2 NKomVG grants it the legal status of an independent city with all related rights and duties.
- **Göttingen.** Although principally a city within a district (§ 16 Abs. 1 NKomVG), it can be considered as independent city under § 16 Abs. 2 NKomVG.
- **Aachen.** Under § 4 Abs. 1 Aachen-Gesetz, the city of Aachen, is given the legal status of an independent city.

Federal city states (Berlin, Hamburg and Bremen/Bremerhaven) are not considered, as they are either both a federal state and a city, or a federal state with no municipal constitution (Art. 1 Abs. 1 i.V.m. Art. 3 Abs. 2 VvB, Art. 1 i.V.m. Art. 4 Abs. 1 Verfassung der Freien und Hansestadt Hamburg; Burgi, 2015; Knemeyer, 2004).

2.2.3. Selection of case studies

The set of 107 cities considered for this thesis (Sections 2.2.1 and 2.2.2) is drawn from the GV-ISys-dataset provided by the German Federal Office of Statistics (Statistisches Bundesamt, 2016). Cities were classified by applying the typology developed by the German Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR-types), which distinguishes four categories, based on the number of inhabitants (BBSR, 2016). The German Federal Bureau of Statistics has applied this typology since 1 November 2011 (Statistisches Bundesamt, 2015). The distribution of BBSR-types is shown in Table 3 and Figure 4 (names are given in German). The international literature refers to the population of the cities in the dataset as small, secondary, intermediate or intermediary (Section 1.1).

Finally, the global application of the AIF was tested on the city of Mwanza, Tanzania (Paper 1, Appendix A.1), which maintains a climate partnership with the city of Würzburg, Germany (Abdallah, 18.09.2017; Göpfert, 2015; Service Agency Communities in One World (Ed.), 2013).

Table 3 Categorization of the 107 cities considered in this thesis by BBSR-type.

| BBSR-type | Number of inhabitants | Number of independent cities | | |
|---|-----------------------|------------------------------|----------|------------|
| | | absolute | relative | cumulative |
| Kleine Mittelstadt (small medium-sized city) | < 50,000 | 17 | 15.89 % | 15.89 % |
| Große Mittelstadt (large medium-sized city) | < 100,000 | 24 | 22.43 % | 38.32 % |
| Kleine Großstadt (smaller big city) | < 500,000 | 55 | 51.40 % | 89.72 % |
| Große Großstadt (larger big city) | ≥ 500,000 | 11 | 10.28 % | 100 % |

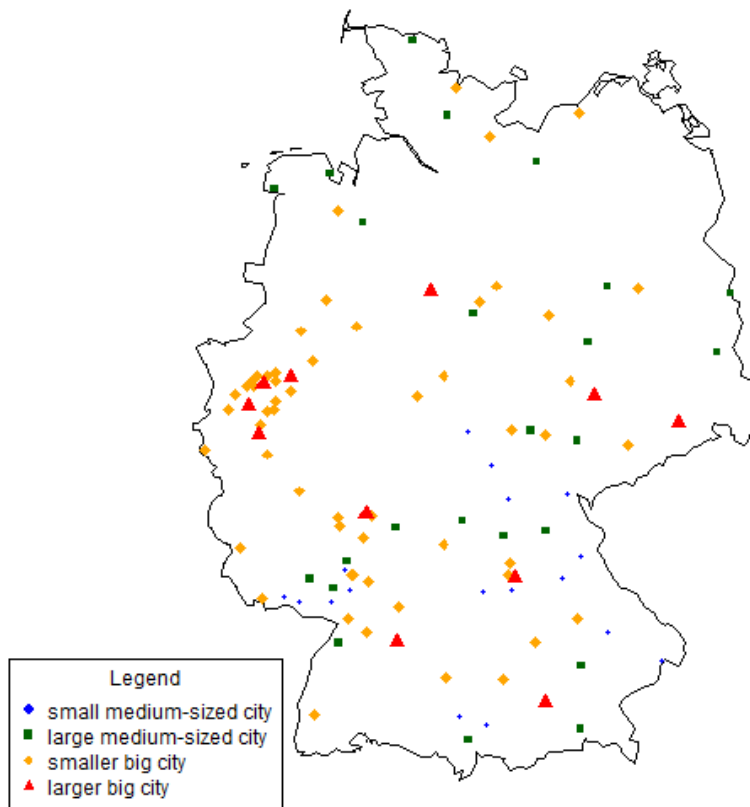


Figure 4 Geospatial location of the 107 independent cities in Germany, classified according to the BBSR-typology.

2.3. Data collection and analysis

In general, the research presented in this thesis is based on a multi and mixed methods approach (Kuckartz, 2014a). While most empirical studies of urban responses to climate change are based on in-depth case studies or small-N studies (Castán Broto & Bulkeley, 2013), this thesis tries to bridge the – artificial – gap between explanatory/ analytic-nomological (often referred to as quantitative) and exploratory/ interpretative-hermeneutical (qualitative) social research (Kromrey, 2009). As an explicit, synthetic methodological approach, Qualitative Comparative Analysis (QCA) is used in Paper 2 (Appendix A.2) to identify relevant organizational conditions (i.e., variables in the AIF) that might support the joint implementation of mitigation and adaptation in city council resolutions. QCA synthesizes qualitative and quantitative methodological elements. It not only enables a larger number of cases to be considered, but also considers complex and conjunctural causation within and between cases (Ragin, 1987).

To enhance intersubjective verifiability, this thesis is predominantly based on clear, set-theoretical definitions of social phenomena (the Adaptation Assessment and h_{MAX} , Sections 3.1 and 3.2), and freely accessible data (city council resolutions, rules of procedure, statutes, municipal mitigation and adaptation concepts). Appendix B.3 lists all sources used in the analysis of city advisory committees (Paper 3), and Appendix B.1 provides an overview of the sources used in the research presented in Paper 2.

This section provides an overview of the data collected from the 107 German cities (Tables 4–7), and links to the Papers. Data collection and analyses used to develop the AIF, and its theoretical and practical applications are described in detail in the respective Papers (Appendix A), accompanied by graphical abstracts of methodological approaches (Figure 6 in Paper 2, Appendix A.2; Figure A1 in Paper 3, Appendix A.3).

For the data analysis presented in Paper 2, the R software environment was used, together with Readr, Dplyr, Tidy, FSA, ggplot2, ggbeeswarm, and Rcompanion packages (Clarke & Sherrill-Mix, 2017; Mangiafico, 2019; Ogle, Wheeler, & Dinno, 2019; R Core Team, 2019; Wickham, 2016; Wickham, Francois, Henry, & Müller, 2019; Wickham & Henry, 2019; Wickham, Hester, & Francois, 2018). In order to analyze and illustrate the network's nodes and edges, within and between city advisory committees (Paper 3), the Python programming language was used (Van Rossum & Drake, 2009), in combination with the NetworkX library (Hagberg, Schult, & Swart, 2008; Zinoviev, 2018), and Gephi software (Bastian, Heymann, & Jacomy, 2009).

Table 4 Empirical data for the BBSR-type Kleine Mittelstädte (small medium-sized cities). These independent cities have up to 49,999 inhabitants, and 41.17 % of cities within this category were analyzed. Average $h_{MAX} = 0.009$.

| City | Population | State | Paper 3 | Paper 2 | | |
|---------------------|------------|----------------------|---------------------|-----------|---------|-----------|
| | | | Analyzed committees | ORG | IPI | h_{MAX} |
| Zweibrücken | 34,011 | Rhineland-Palatinate | 3 | Absent | Partial | 0 |
| Suhl | 36,208 | Thuringia | 7 | Absent | Absent | 0 |
| Schwabach | 39,941 | Bavaria | 5 | | | |
| Ansbach | 40,010 | Bavaria | 3 | Inclusive | Partial | 0.02 |
| Pirmasens | 40,046 | Rhineland-Palatinate | 3 | | | |
| Coburg | 41,062 | Bavaria | 2 | Partial | Partial | 0.02 |
| Amberg | 41,535 | Bavaria | 1 | Partial | Partial | 0 |
| Weiden (Oberpfalz) | 41,817 | Bavaria | 5 | | | |
| Eisenach | 41,884 | Thuringia | 3 | Partial | Partial | 0.25 |
| Kaufbeuren | 42,014 | Bavaria | 3 | | | |
| Memmingen | 42,201 | Bavaria | 4 | | | |
| Hof (Saale) | 44,325 | Bavaria | 7 | | | |
| Landau (Pfalz) | 44,465 | Rhineland-Palatinate | 4 | | | |
| Straubing | 46,027 | Bavaria | 4 | | | |
| Frankenthal (Pfalz) | 47,724 | Rhineland-Palatinate | 4 | | | |
| Speyer | 49,855 | Rhineland-Palatinate | 6 | | | |
| Passau | 49,952 | Bavaria | 1 | Absent | Absent | 0 |

Table 5 Empirical data for the BBSR-type Große Mittelstädte (large medium-sized cities). These independent cities have between 50,000 and 99,999 inhabitants. Colored rows indicate cities that have climate-specific committees (CSC) (Paper 3, Appendix A.3); 75 % of cities in this category were analyzed. Average $h_{MAX} = 0.101$.

| City | Population | State | Paper 3 | Paper 2 | | h_{MAX} |
|--------------------------|------------|-------------------------------------|---------------------|-----------|------------|-----------|
| | | | Analyzed committees | ORG | IPI | |
| Emden | 50,016 | Lower Saxony | 2 | | | |
| Schweinfurt | 51,610 | Bavaria | 4 | Inclusive | Partial | 0.02 |
| Neustadt (Weinstraße) | 52,564 | Rhineland- Palatinate | 3 | Partial | Partial | 0.04 |
| Baden-Baden | 53,342 | Baden- Württemberg | 1 | Partial | Fragmented | 0.26 |
| Frankfurt (Oder) | 57,649 | Brandenburg | 6 | Inclusive | Partial | 0.23 |
| Rosenheim | 60,889 | Bavaria | 2 | Partial | Inclusive | 0 |
| Weimar | 63,447 | Thuringia | 5 | Partial | Partial | 0 |
| Kempten (Allgäu) | 65,624 | Bavaria | 4 | Partial | Partial | 0 |
| Landshut | 67,509 | Bavaria | 4 | | | |
| Aschaffenburg | 68,167 | Bavaria | 5 | Inclusive | Fragmented | 0.19 |
| Brandenburg (Havel) | 71,032 | Brandenburg | 8 | Inclusive | Inclusive | 0.12 |
| Bayreuth | 71,601 | Bavaria | 6 | | | |
| Bamberg | 71,952 | Bavaria | 4 | Inclusive | Fragmented | 0.08 |
| Delmenhorst | 74,804 | Lower Saxony | 6 | Partial | Partial | 0.07 |
| Wilhelmshaven | 75,534 | Lower Saxony | 5 | Partial | Partial | 0 |
| Neumünster | 77,588 | Schleswig- Holstein | 4 | | | |
| Worms | 81,010 | Rhineland- Palatinate | 8 | | | |
| Dessau-Roßlau | 83,061 | Saxony-Anhalt | 6 | | | |
| Flensburg | 84,694 | Schleswig- Holstein | 3 | Inclusive | Fragmented | 0.27 |
| Schwerin | 92,138 | Mechlenburg- Hither Pomerania | 5 | Inclusive | Fragmented | 0.09 |
| Gera | 94,492 | Thuringia | 2 | Partial | Partial | 0.09 |
| Kaiserslautern | 97,382 | Rhineland- Palatinate | 5 | Inclusive | Inclusive | 0.33 |
| Salzgitter | 98,966 | Lower Saxony | 4 | Partial | Partial | 0.02 |
| Cottbus | 99,491 | Brandenburg | 4 | Partial | Partial | 0 |

Table 6 Empirical data for the BBSR-type Kleine Großstädte (smaller big cities). These independent cities have between 100,000 and 499,999 inhabitants. Colored rows indicate cities with climate-specific committees (CSC) (Paper 3, Appendix A.3); 70.9 % of cities in this category were analyzed. Average $h_{MAX} = 0.125$.

| City | Population | State | Paper 3 | Paper 2 | | h_{MAX} |
|----------------------|------------|------------------------------|---------------------|------------|------------|-----------|
| | | | Analyzed committees | ORG | IPI | |
| Erlangen | 106,423 | Bavaria | 7 | Inclusive | Fragmented | 0.47 |
| Jena | 108,207 | Thuringia | 14 | | | |
| Trier | 108,472 | Rhineland-Palatinate | 8 | Fragmented | Fragmented | 0.11 |
| Remscheid | 109,009 | North Rhine-Westphalia | 5 | | | |
| Koblenz | 111,434 | Rhineland-Palatinate | 6 | | | |
| Bottrop | 116,017 | North Rhine-Westphalia | 5 | Inclusive | Inclusive | 0.18 |
| Göttingen | 117,665 | Lower Saxony | 6 | Fragmented | Inclusive | 0.05 |
| Pforzheim | 119,291 | Baden-Württemberg | 4 | Inclusive | Fragmented | 0.19 |
| Heilbronn | 119,841 | Baden-Württemberg | 5 | Inclusive | Fragmented | 0.26 |
| Ulm | 120,714 | Baden-Württemberg | 2 | | | |
| Offenbach (Main) | 120,988 | Hesse | 10 | Inclusive | Inclusive | 0.11 |
| Fürth | 121,519 | Bavaria | 6 | Partial | Partial | 0 |
| Wolfsburg | 123,027 | Lower Saxony | 2 | Partial | Partial | 0 |
| Würzburg | 124,219 | Bavaria | 11 | Inclusive | Inclusive | 0.13 |
| Ingolstadt | 131,002 | Bavaria | 7 | | | |
| Regensburg | 142,292 | Bavaria | 9 | Fragmented | Fragmented | 0.05 |
| Darmstadt | 151,879 | Hesse | 16 | Inclusive | Fragmented | 0.05 |
| Herne | 154,608 | North Rhine-Westphalia | 6 | Inclusive | fragmented | 0.14 |
| Heidelberg | 154,715 | Baden-Württemberg | 4 | Inclusive | Fragmented | 0.06 |
| Solingen | 156,771 | North Rhine-Westphalia | 7 | | | |
| Osnabrück | 156,897 | Lower Saxony | 4 | Inclusive | Fragmented | 0.19 |
| Oldenburg | 160,907 | Lower Saxony | 3 | Inclusive | Partial | 0.04 |
| Leverkusen | 161,540 | North Rhine-Westphalia | 4 | | | |
| Ludwigshafen (Rhein) | 163,832 | Rhineland-Palatinate | 4 | | | |
| Potsdam | 164,042 | Brandenburg | 4 | Inclusive | Inclusive | 0.04 |
| Mülheim (Ruhr) | 167,108 | North Rhine-Westphalia | 4 | Inclusive | Inclusive | 0.25 |
| Hamm | 176,580 | North Rhine-Westphalia | 4 | Inclusive | Partial | 0.04 |
| Saarbrücken | 176,926 | Saarland | 5 | | | |
| Hagen | 186,716 | North Rhine-Westphalia | 6 | Inclusive | Fragmented | 0.23 |
| Kassel | 194,747 | Hesse | 12 | Inclusive | Fragmented | 0.16 |
| Rostock | 204,167 | Mechlenburg-Hither Pomerania | 7 | Partial | Partial | 0.06 |
| Erfurt | 206,219 | Thuringia | 9 | | | |
| Mainz | 206,991 | Rhineland-Palatinate | 8 | | | |
| Oberhausen | 209,292 | North Rhine-Westphalia | 7 | Inclusive | Inclusive | 0.21 |
| Lübeck | 214,420 | Schleswig- | 2 | Inclusive | Fragmented | 0.04 |

| City | Population | State | Paper 3 | Paper 2 | | h_{MAX} |
|---------------------|------------|------------------------|---------------------|------------|------------|-----------|
| | | | Analyzed committees | ORG | IPI | |
| Freiburg (Breisgau) | 222,203 | Holstein | 5 | Fragmented | Fragmented | 0.03 |
| Krefeld | 222,500 | Baden-Württemberg | 7 | Inclusive | Fragmented | 0.18 |
| Magdeburg | 232,306 | North Rhine-Westphalia | 3 | Inclusive | Fragmented | 0.09 |
| Halle (Saale) | 232,470 | Saxony-Anhalt | 7 | Fragmented | Inclusive | 0 |
| Kiel | 243,148 | Saxony-Anhalt | 10 | Partial | Partial | 0.04 |
| Aachen | 243,336 | Schleswig-Holstein | 2 | | | |
| Chemnitz | 243,521 | North Rhine-Westphalia | 6 | | | |
| Braunschweig | 248,521 | Saxony | 3 | Inclusive | Fragmented | 0.16 |
| Mönchengladbach | 256,853 | Lower Saxony | 2 | Partial | Partial | 0.09 |
| Gelsenkirchen | 257,651 | North Rhine-Westphalia | 4 | Inclusive | Fragmented | 0.05 |
| Wiesbaden | 275,116 | Hesse | 5 | Inclusive | Fragmented | 0.42 |
| Augsburg | 281,111 | Bavaria | 8 | Partial | Fragmented | 0.08 |
| Mannheim | 299,844 | Baden-Württemberg | 3 | | | |
| Karlsruhe | 300,051 | Baden-Württemberg | 6 | Inclusive | Inclusive | 0.15 |
| Münster | 302,178 | North Rhine-Westphalia | 7 | | | |
| Bonn | 313,958 | North Rhine-Westphalia | 6 | Inclusive | Inclusive | 0.11 |
| Bielefeld | 329,782 | North Rhine-Westphalia | 6 | | | |
| Wuppertal | 345,425 | North Rhine-Westphalia | 6 | Inclusive | Fragmented | 0.06 |
| Bochum | 361,876 | North Rhine-Westphalia | 5 | Inclusive | Inclusive | 0.25 |
| Duisburg | 485,465 | North Rhine-Westphalia | 6 | Inclusive | Fragmented | 0.11 |

Table 7 Empirical data for the BBSR-type Große Großstädte (larger big cities). These independent cities have over 500,000 inhabitants. Colored rows indicate cities with climate-specific committees (CSC) (Paper 3, Appendix A.3); 72.7 % of cities in this category were analyzed. Average $h_{MAX} = 0.183$.

| City | Population | State | Paper 3 | Paper 2 | | h_{MAX} |
|------------------|------------|------------------------|---------------------|------------|------------|-----------|
| | | | Analyzed committees | ORG | IPI | |
| Nuremberg | 501,072 | Bavaria | 5 | Inclusive | Inclusive | 0.35 |
| Hannover | 523,642 | Lower Saxony | 3 | | | |
| Dresden | 536,308 | Saxony | 6 | Fragmented | Fragmented | 0.04 |
| Leipzig | 544,479 | Saxony | 11 | Inclusive | Fragmented | 0.07 |
| Essen | 573,784 | North Rhine-Westphalia | 5 | Inclusive | Inclusive | 0.26 |
| Dortmund | 580,511 | North Rhine-Westphalia | 4 | | | |
| Düsseldorf | 604,527 | North Rhine-Westphalia | 6 | Inclusive | Fragmented | 0.13 |
| Stuttgart | 612,441 | Baden-Württemberg | 6 | | | |
| Frankfurt (Main) | 717,624 | Hesse | 9 | Fragmented | Fragmented | 0.03 |
| Cologne | 1,046,680 | North Rhine-Westphalia | 8 | Inclusive | Fragmented | 0.14 |
| Munich | 1,429,584 | Bavaria | 9 | Inclusive | Fragmented | 0.45 |

Additionally, in order to understand and test the ability of the AIF to gather applicable data, and to assess the degree of joint institutionalization, a typological analysis (Kelle & Kluge, 2010; Kluge, 2000; Kuckartz, 2014b; Mayring, 2016) was conducted on a subset of 19 cities. In particular, those with a climate-specific committee, subsumed under the variable *ECA* (see Paper 3, Appendix A.3). Specific data regarding all variables making up the AIF was collected via documentary analysis, and questionnaires that were emailed to officials predominantly responsible for climate mitigation issues (sent on 11 April 2019 and 16 April 2019, response rate: 85 %) (Table 8).

Table 8 Adaptation Assessment of 19 cities for preliminary testing of the AIF. GG = Große Großstadt/ larger big city, kG = kleine Großstadt/ smaller big city, gM = große Mittelstadt/ large medium-sized city. 0 = absent, 1 = partial, 2 = fragmented, 3 = inclusive. Variables are explained in Table 10. The data was gathered predominantly via unpublished email-questionnaires and from the official websites of the cities.

| City | BBSR | ORG | GOA/VIS | IIA | ICA | ECA | IPI | FPI | Source | Date |
|------------------|------|-----|---------|-----|-----|-----|-----|-----|-----------------------|------------|
| Aschaffenburg | gM | 3 | 1 | 3 | 0 | 1 | 2 | 3 | Web/ Mail | 16.04.2019 |
| Bonn | kG | 3 | 3 | 2 | 2 | 3 | 3 | 3 | Web/ Mail | 22.05.2019 |
| Darmstadt | kG | 3 | 3 | 3 | 3 | 1 | 2 | 3 | Web/ Mail | 15.04.2019 |
| Dortmund | GG | 3 | 3 | 2 | 3 | 3 | 3 | 3 | Web/ Mail | 06.06.2019 |
| Frankfurt (Main) | GG | 2 | 2 | 2 | 1 | 1 | 2 | 2 | Web/ Mail | 18.04.2019 |
| Frankfurt (Oder) | gM | 3 | 1 | 3 | 3 | 3 | 1 | 3 | Web | 16.04.2019 |
| Göttingen | kG | 2 | 2 | 2 | 1 | 3 | 3 | 2 | Web/ Mail | 12.04.2019 |
| Heidelberg | kG | 2 | 1 | 2 | NA | 1 | 2 | 2 | Web | 16.04.2019 |
| Kaiserslautern | gM | 3 | 2 | 2 | 2 | 1 | 2 | 3 | Web/ Mail | 24.04.2019 |
| Karlsruhe | kG | 3 | 2 | 2 | 1 | 1 | 2 | 3 | Web/ Mail | 26.06.2019 |
| Kempten | gM | 1 | 1 | 1 | 0 | 1 | 1 | 1 | Web/ Mail | 22.05.2019 |
| Ludwigshafen | kG | 2 | 1 | 1 | NA | 3 | 2 | 2 | Web/ Phone | 08.07.2019 |
| Magdeburg | kG | 3 | 2 | 2 | 1 | 1 | 2 | 3 | Web/ Mail | 21.06.2019 |
| Mainz | kG | 1 | 2 | 1 | 0 | 1 | 2 | 1 | Web/ Mail | 21.06.2019 |
| Mülheim | kG | 3 | 3 | 3 | 2 | 3 | 3 | 3 | Web/ Mail | 17.04.2019 |
| Münster | kG | 3 | 2 | 2 | 2 | 1 | 2 | 3 | Web/ Mail | 18.04.2019 |
| Osnabrück | kG | 3 | 3 | 2 | 2 | 1 | 2 | 3 | Web/ Mail | 12.04.2019 |
| Potsdam | kG | 3 | 2 | 3 | 3 | 3 | 3 | 3 | Web/ Mail | 01.07.2019 |
| Würzburg | kG | 3 | 1 | 3 | 3 | 3 | 3 | 3 | Personal knowledge | 16.04.2019 |

3. Results

This section briefly summarizes the main results of the thesis, and connects the three published papers. It begins with an overview of the results and innovations (Table 9). Section 3.1 then introduces the focal **instrument** for assessing the (joint) institutionalization of mitigation and adaptation in cities (the Adaptation Assessment, Figure 5). Section 3.2 demonstrates how to use this instrument to solve **scientific problems**, and provisionally confirms the main research hypothesis for the specific case of (joint) organizational and conceptual institutionalization (the independent variable), and the relative co-occurrence of mitigation and adaptation terms in council resolutions (the dependent variable, h_{MAX} , Figure 5). Taking the example of advisory committees, Section 3.3 presents a **practical application** of the instrument, together with network analytics that show how to enhance joint institutionalization in city administrations.

Table 9 Overview: Results and innovations of the published papers (Appendix A)

| | |
|-------------------|---|
| Paper 1 | |
| Goal | Understand and assess the joint institutionalization of mitigation and adaptation |
| Results | The Adaptation Institutionalization Framework |
| Innovation | An initial heuristic to analyze (joint) institutionalization in city administrations, combining organizational and climate policy theories |
| Paper 2 | |
| Goal | <i>Scientific application:</i> Test the main research hypothesis |
| Results | Significant association between (joint) organizational institutionalization and the co-occurrence of the terms ‘mitigation’ and ‘adaptation’ in city council resolutions; explicit joint climate action plans are not mandatory |
| Innovation | Development of the proxy variable h_{MAX} to assess the outcome, based on resolutions. Combining qualitative and quantitative methods (QCA and Kruskal-Wallis test). First evidence of significant associations between institutionalization and implementation of mitigation and adaptation measures. |
| Paper 3 | |
| Goal | <i>Practical application:</i> Assess and enhance the joint institutionalization of mitigation and adaptation in municipal advisory committees (AIF variable <i>ECA</i>) |
| Results | A climate-related typology of municipal advisory committees in 107 cities; advisory committees generally have homophilous actor structures, but climate-specific committees are interdisciplinary; mainstreaming of adaptation into all kinds of thematic committees is possible; network analytics can be used to enhance committee structures for effective mainstreaming and implementation of mitigation and adaptation measures. |
| Innovation | First analysis and climate-related classification of municipal advisory committees using network analysis. Comprehensive overview of the different types of committees. |

Joint institutionalization leads to joint implementation.

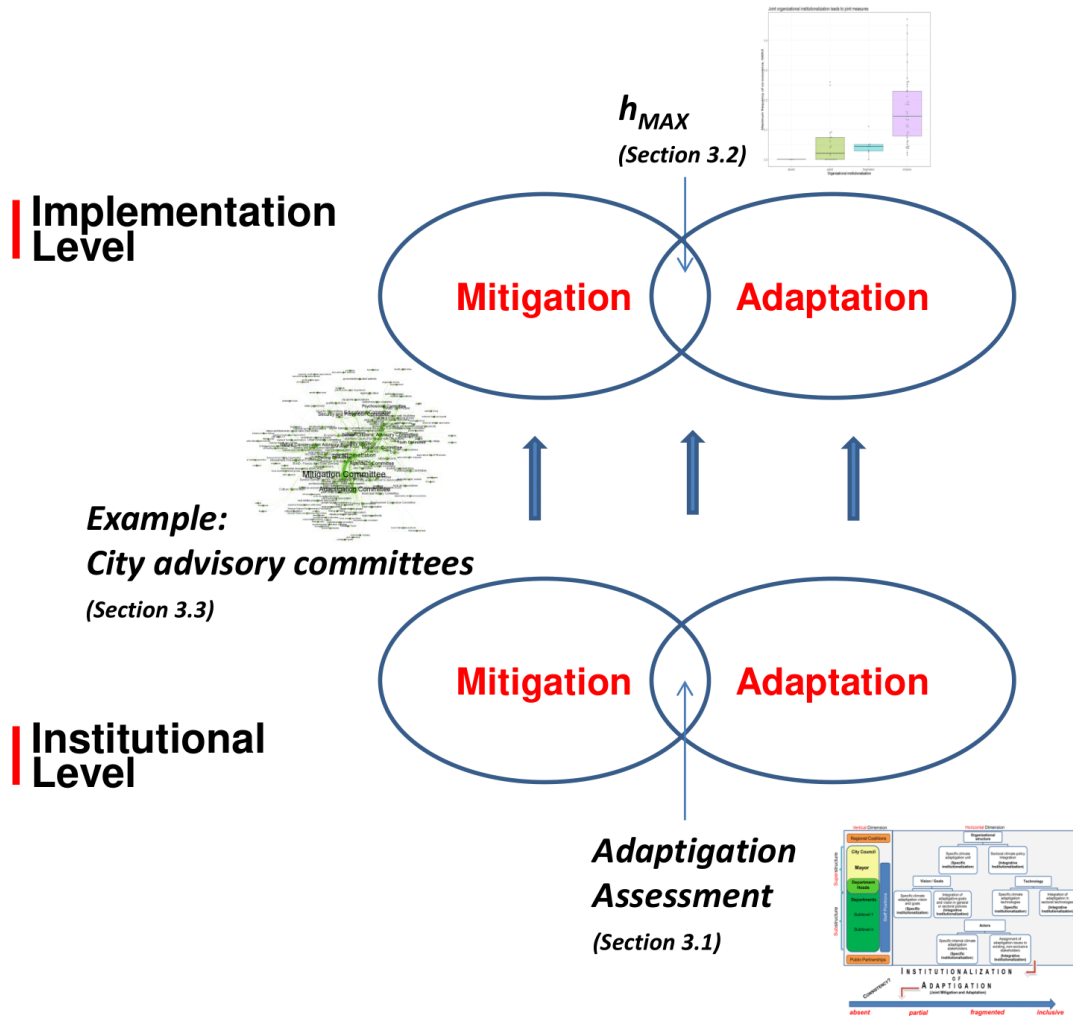


Figure 5 Three main results of the thesis.

Pilot application: In all papers (Appendix A), the city of Würzburg illustrates the practical application of the AIF (see also the poster presentation in Appendix B.5), and to elucidate its relevance to city administrations worldwide. It exemplifies how city administrations can use the framework, and related applications to assess and analyze the extent of the joint institutionalization of mitigation and adaptation, and how to conduct social network analyses to promote their mainstreaming into collaboration structures with external actors.

3.1. Understanding and assessing joint institutionalization (Paper 1)

With regard to the main research hypothesis (Figure 5), the AIF (Figure 6, developed in Paper 1, Appendix A.1) is a tool that helps in understanding and assessing the (joint) institutionalization of mitigation and adaptation in city administrations.

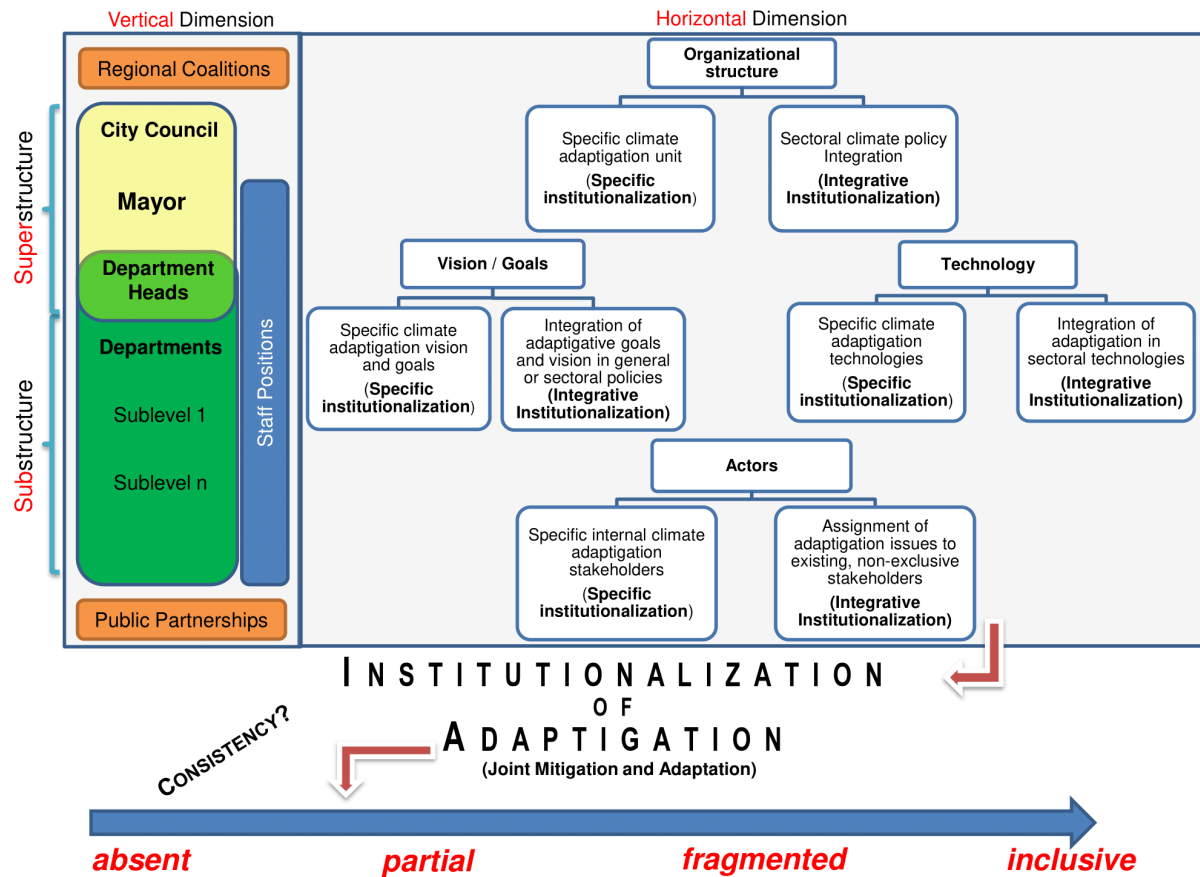


Figure 6 The Adaptation Institutionalization Framework (AIF).

Organizational Features. The framework is founded on four features, which are deduced from the theoretical and empirical considerations outlined in Section 2.1:

- the organizational structure;
- the goals and vision of the organization;
- the people who participate in it (internal actors and external stakeholders); and
- the technology the organization uses to accomplish its tasks.

Drawing on earlier, conceptual work related to adaptation and ecosystem-based mainstreaming, and the climate policy integration approach (Section 2.1), the institutionalization of climate-related issues in the AIF was divided into two dimensions: horizontal and vertical. The horizontal dimension localizes the institutionalization of mitigation

and adaptation in administrative sectors (a dedicated climate department, or integrated into environmental or city planning departments; a dedicated climate action plan, or integrated into existing sectoral plans, etc.). The vertical dimension localizes their institutionalization within the hierarchy. The hierarchy defines the level of power – from the most powerful entities (the city council and the mayor), to the least (an individual official or assistant at lowest level).

The research objective was to analyze the institutionalization and incorporation of the values and contents of mitigation and adaptation (adaptigation) in the municipality’s administration. Given this consideration, and aspects of symbolic and action consistency (Martin & Meyerson, 1988), the analytical model focuses on structures, goals, participants, technology and city council resolutions where mitigation and adaptation are clearly part of the organizational jargon, and explicitly addressed (Wamsler & Pauleit, 2016). Although the primary focus is on the specific institutionalization of mitigation and adaptation, the AIF is also able to consider the integrative institutionalization (mainstreaming) of these issues in related disciplines.

Adaptigation Assessment. The term adaptigation is used to assess the degree of institutionalization with regard to the synergetic and inclusive implementation of mitigation and adaptation in the four features mentioned above. Applying set theory and Boolean algebra, mitigation, adaptation and adaptigation can be defined with Equation 1, where MA refers to adaptigation (i.e., the extent of joint institutionalization); x refers to the variable (i.e., the feature according to the AIF, Table 10); M refers to mitigation; A refers to adaptation.

$$MA_x = \begin{cases} \text{absent, for } M_x = 0 \Delta A_x = 0 \\ \text{partial, for } (M_x = 1 \Delta A_x = 0) \oplus (M_x = 0 \Delta A_x = 1) \\ \text{fragmented, for } M_x = 1 \Delta A_x = 1 \Delta \neg(M_x = A_x) \\ \text{inclusive, for } M_x = A_x \end{cases} \quad \text{Eq (1)}$$

A graphical illustration of the set relations is given in Figure 7.

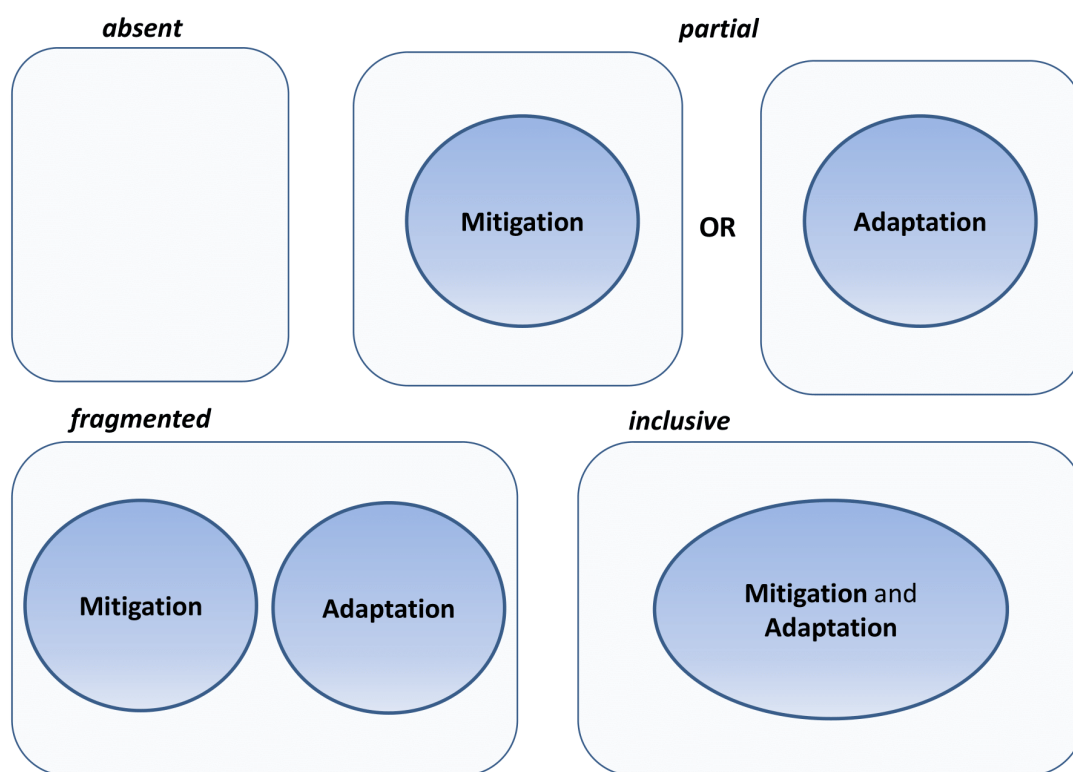


Figure 7 Venn diagrams showing the set theoretic definition of the different levels of joint institutionalization of mitigation and adaptation (adaptigation).

The Adaptation Assessment is comprehensively described in Paper 1 (Appendix A.1). Therefore, only a concise summary of the four levels is given here (with respect to Equation 1).

- *Absent*: Neither mitigation nor adaptation are formally implemented. Some aspects may be implemented, but the official jargon is not used.
- *Partial*: Either mitigation or adaptation is implemented.
- *Fragmented*: Both mitigation and adaptation are implemented, but separately.
- *Inclusive*: Both mitigation and adaptation are implemented together.

This general scheme can be used to assess institutionalization (an example of the application of the full set of variables in 19 cities is shown in Section 2.3, Table 8) and to analyze the implementation of adaptigation (Section 3.3). The blue arrow at the bottom of Figure 6 represents the adaptigation dimension.

Based on the four organizational features and the Adaptation Assessment, a set of variables was developed and can be used to assess the horizontal and vertical institutionalization of adaptigation. A comprehensive overview of the different variables and their combinations is provided in Table 10.

Table 10 Description of characteristics and attributes of the Adaptation Institutionalization Framework.

| | | Characteristics and Attributes | | | | | | | |
|--------------------------|---------------|--|---|---|---|---|---|--|--|
| Features | Variables (x) | Adaptation (MA _x) | | | Horizontal Institutionalization (H _x) | | Vertical Institutionalization (V _x) | | |
| | | Inclusive (M _x = A _x) | Fragmented (M _x AND A _x) | Partial (M _x OR A _x) | Absent (NEITHER M _x NOR A _x) | Specific | Integrative | Super | Sub |
| | | <i>Both mitigation and adaptation are institutionalized...</i> | | <i>Either mitigation or adaptation is institutionalized...</i> | <i>Some issues may be institutionalized separately (like greening or energy efficiency), but...</i> | <i>Exclusively institutionalized ...</i> | <i>Mainstreamed in...</i> | <i>at the political board or executive board level</i> | <i>at the department level (including substructures)</i> |
| Organizational Structure | ORG | in the same organizational unit | but in different organizational units | within an organizational unit | no department is explicitly tasked with addressing mitigation/ adaptation | as a specific organizational mitigation/ adaptation unit | an existing, non-climate specific unit, as a secondary task | organizationally located units | |
| Goals / Visions | GOA | by joint goals, considering interrelations and interdependencies | by separate goals, without considering interrelations and interdependencies | within municipal goals | no goals are set under the explicit heading of mitigation / adaptation | by setting specific mitigation/ adaptation goals | goals, or integrated into other sectoral concepts or resolutions | official goals | |
| | VIS | by joint visions, considering synergies and trade-offs | by different visions, without considering synergies and trade-offs | within municipal visions | no visions are formulated under the explicit heading of mitigation / adaptation | by having a dedicated mitigation/ adaptation vision | a more comprehensive or sectoral vision | the official vision | |
| Actors | IIA | by assigning the same person to cover both topics | by assigning different officials to mitigation and adaptation, but none to both | by assigning public servants to either mitigation or adaptation | no public servants are officially in charge of the explicit tasks of mitigation/ adaptation | by dedicating a public servant to mitigation/ adaptation issues | as a secondary task of an official, who was previously in charge of non-climate-specific issues | organizationally located in public servants | |
| | ICA | as explicit committee topics | as explicit topics for different committees, but none considers both | within the municipality's committees | no committees exist that are explicitly concerned with mitigation or adaptation | as the focus of a mitigation / adaptation committee. Usually, its name reflects the official jargon | the tasks of a committee that was originally responsible for non-climate-specific issues | organizationally located in committees | |
| | ECA | | | | | | | | |
| Technology | IPI | within an informal, lead concept that considers both topics | by different informal concepts, but none considers both | within informal concepts | there are no informal concepts that explicitly consider mitigation/ adaptation | as the main focus and purpose of a mitigation / adaptation instrument | a sectoral, non-specific climate-related instrument | informal concepts | |
| | FPI | within formal planning instruments (SOP), considering interrelations and interdependencies | within different planning SOP, but not in relation to each other | within planning SOP | there is no explicit integration of mitigation/ adaptation in planning SOP | 1. by creating a SOP dedicated to implementing mitigation / adaptation in urban planning 2. by mainstreaming mitigation / adaptation into a sectoral SOP. A dedicated climate unit is responsible for considering climate issues | a sectoral SOP. Responsibility for considering the climatic issues lies with the sectoral unit | SOP | |

3.2. Enhancing joint institutionalization (Paper 2)

Drawing upon the independent variables *organizational institutionalization (ORG)* and *climate action concepts (IPI)*, the research hypothesis was tested using the dependent variable *co-occurrence of the terms mitigation and adaptation* in council resolutions passed in 72 German cities from 1 January 2015 to 30 April 2019 (h_{MAX}).

A preliminary adaptation assessment of *ORG* as a function of city size (BBSR-type) showed that inclusive organizational institutionalization increased (i.e., mitigation and adaptation organizationally located in the same department, shown by the purple bars) as city size increased (Figure 8). Fragmented organizational institutionalization (i.e., mitigation and adaptation in different departments, shown by the blue bars) only occurred in cities with more than 100,000 inhabitants. This suggests that larger city administrations have more financial and human resources to maintain dedicated organizational units. With respect to *IPI*, separate (fragmented) climate mitigation and adaptation concepts dominate in cities with more than 50,000 inhabitants. Small cities only use mitigation concepts (shown by the green bars). The concept of adaptation becomes increasingly apparent as city size increases (shown by the cumulative purple and blue bars in Figure 8).

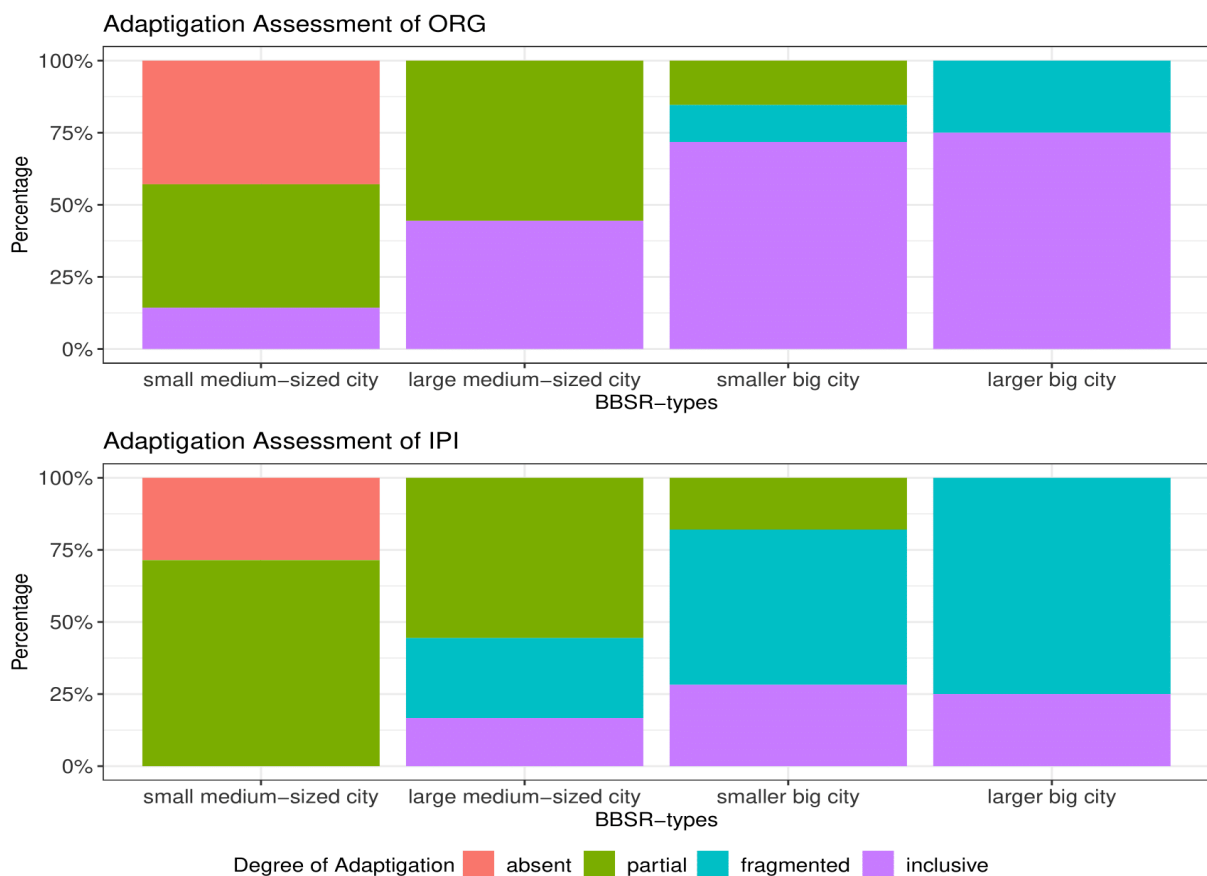


Figure 8 Adaptation Assessment of ORG and IPI as a function of city size (BBSR-type).

The definition of h_{MAX} , as a proxy to assess the implementation of measures, is based on the relative co-occurrence of city council resolutions that mention the terms mitigation [M] and/ or adaptation [A]. Considering the underlying organizational process model and SOP (Section 2.1), their joint appearance could be an indicator of measures that involve both issues. Furthermore, their joint appearance could foster awareness of their interrelations and inseparability. Given the importance of jargon and culture in the climate change discourse on a local level, the analytic operationalization used specific German terms for mitigation (Klimaschutz), and adaptation (Klimaanpassung [KA], Stadtklima [SK], Klimafolge [KF] and Klimawandelanpassung [KWA]). The variable h_{MAX} is defined as follows (Equation 2, Figure 9):

$$h_{MAX} = MAX \left(\frac{H(M \cap A_{KA,SK,KWA,KF})}{H(M) + H(A_{KA,SK,KWA,KF}) - H(M \cap A_{KA,SK,KWA,KF})} \right) \quad \text{Eq (2)}$$

h_{MAX} is described and used in Paper 2 (Appendix A.2) to analyze the association between the organizational institutionalization of mitigation and adaptation, and the co-occurrence of the two terms in council resolutions.

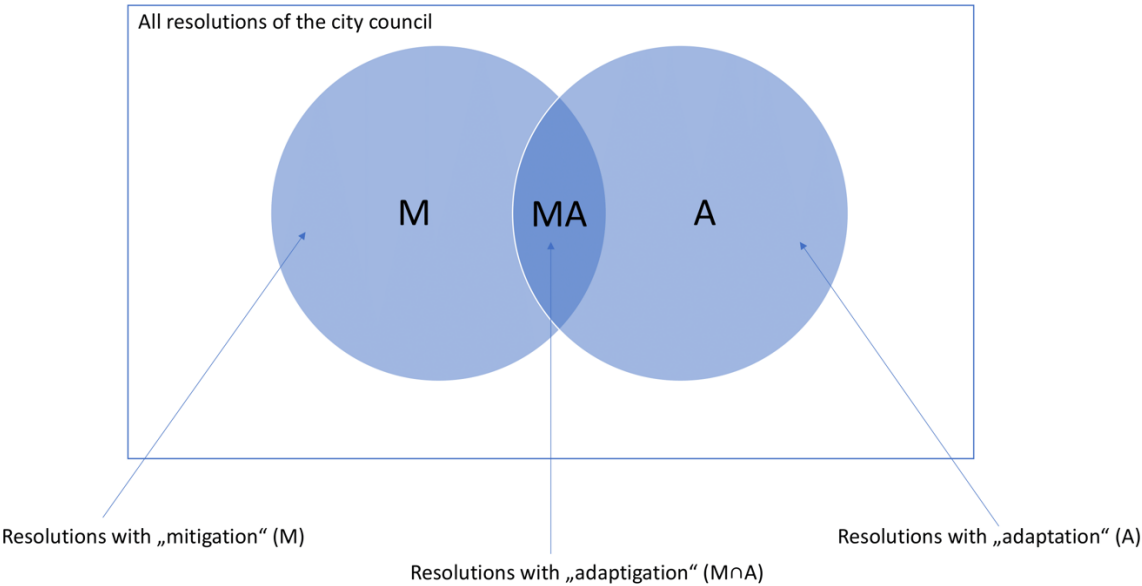


Figure 9 Venn diagram showing the set theoretic approach used to identify the co-occurrence of the terms mitigation and adaptation in city council resolutions.

Based on this assessment, the results reported in Paper 2 show that the joint institutionalization of mitigation and adaptation within the organizational structure (i.e., both issues in one department, *ORG*) is strongly associated with the co-occurrence of the terms ‘mitigation’ and ‘adaptation’ in city council resolutions (h_{MAX} is a proxy variable for awareness-

raising in the council, and the implementation of joint measures based on these council resolutions).

These results support the main hypothesis. Moreover, it is provisionally confirmed in the specific case where the co-occurrence of mitigation and adaptation in resolutions (joint implementation) increases significantly when mitigation and adaptation are jointly institutionalized in the organization. The boxplots shown in Figure 10 highlight that there is a significant difference between the medians of h_{MAX} between cities with joint organizational institutionalization (inclusive) and cities where mitigation and adaptation are institutionalized separately (fragmented), or those where only mitigation is institutionalized in the organizational structure (partial), or where there are no dedicated departments at all (absent). There is also strong evidence that co-occurrence is higher in cities with mitigation and adaptation plans (even though they might be dealt with separately) than in cities with only mitigation, or no plans (Figure 11).

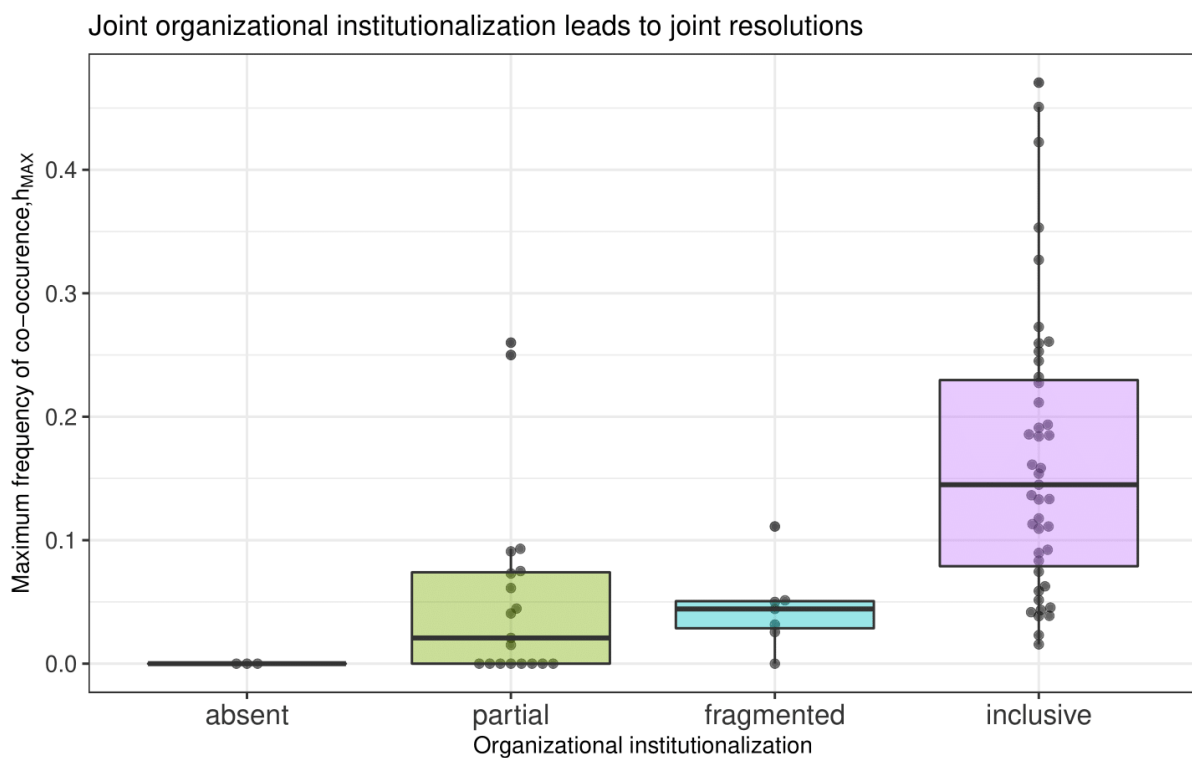


Figure 10 Distribution of the maximum frequency of the co-occurrence of the terms mitigation and adaptation in council resolutions in the sample of 72 cities for the period 1 January 2015 to 30 April 2019 (h_{MAX}), grouped by the organizational institutionalization of mitigation and adaptation.

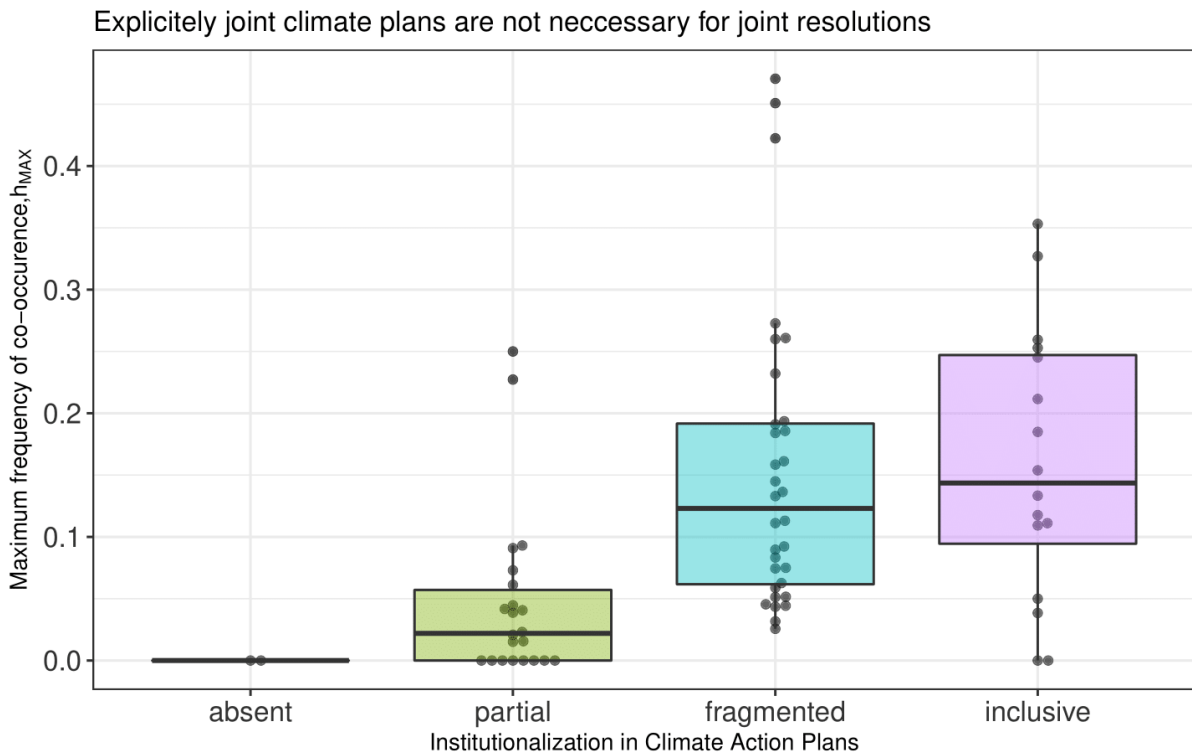


Figure 11 Distribution of the maximum frequency of co-occurrence of mitigation and adaptation in resolutions taken by the sample of 72 city councils for the period 1 January 2015 to 30 April 2019 (h_{MAX}), grouped by the type of local climate action plan (inclusive: joint mitigation and adaptation plan, fragmented: separate plans, partial: only a mitigation plan, absent: no plans).

3.3. Implementing joint institutionalization (Paper 3)

The focus of Paper 3 is the variable *ECA*, namely external and internal collective actors (Figure 12). *ECA* are:

1. structurally implemented in the city administration,
2. composed of internal municipal actors (e.g., political leaders, council members, representatives of departments), and
3. composed of external actors (representatives of organizations and civil society).

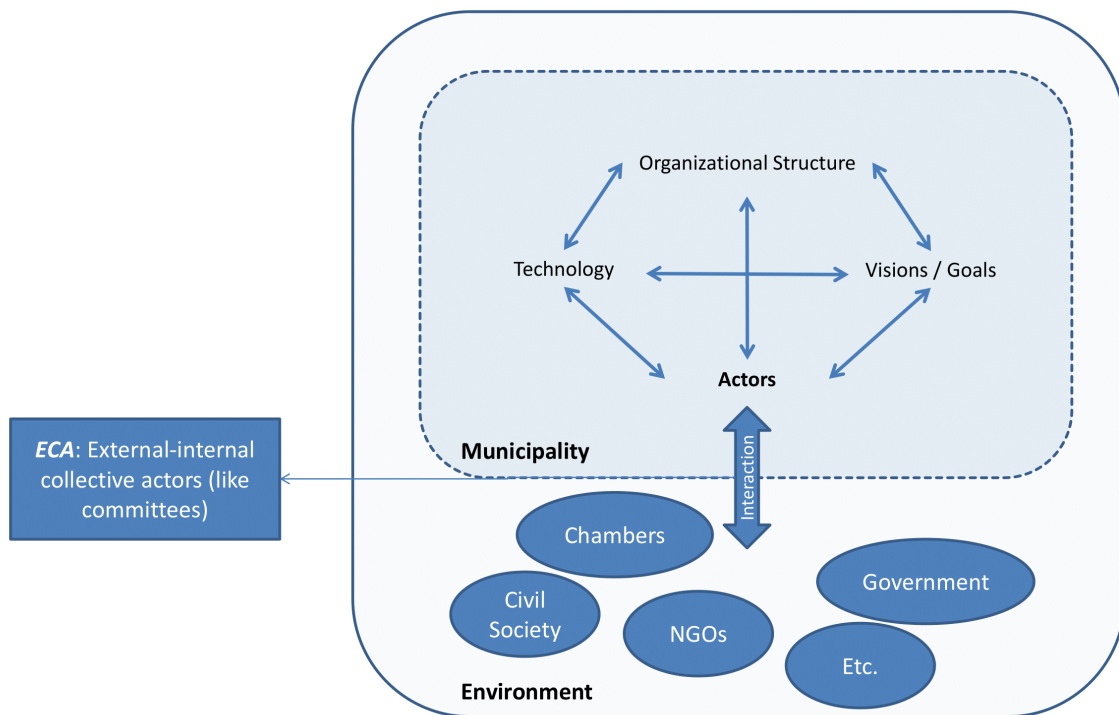


Figure 12 External-internal collective actors within the AIF (schematic illustration).

In Germany, these ECAs are called, for example, Beiräte, Arbeitsgruppen, Runde Tische, Arbeitskreise, Komitees or Kommissionen (Eberhardt, 2000). Paper 3 explicitly focuses on the most institutionalized, formal collaboration structure, city advisory committees (Beiräte). In this context, the key research questions are:

- What types of advisory committees are institutionalized in the sample of cities (including those with an explicit focus on mitigation and adaptation)?
- Which stakeholders participate in which types of committees, and how does this influence the joint institutionalization of mitigation and adaptation?

The investigation looked at 594 municipal advisory committees in Germany (for their distribution among the 107 cities, see Tables 4–7). For the first time, it provides a comprehensive overview and classification of climate-specific committees (CSC) (Table 13, Appendix B.3) and climate integrative committees (CIC) (Tables 14–21, Appendix B.3). There is an explicit focus on horizontal dimensions of the AIF (Figure 6), in the form of the specific institutionalization of mitigation and adaptation through dedicated CSCs, and integrative institutionalization through mainstreaming climatic issues into CICs. The main results are:

- None of the CSCs solely address adaptation (there are only mitigation committees, or mitigation committees that also look at adaptation issues).

- Mitigation and adaptation could be integrated or mainstreamed into all types of committees (CIC).
- CICs have homophilous and disciplinary actor structures, while CSCs are interdisciplinary.
- There are only a few actor connections between thematic committees (shared memberships).
- Because of their interdisciplinary actor structure, CSCs can act as an interface to initiate and facilitate mainstreaming of adaptation into CICs.

Based on a subset of 19 cities that already have CSCs (Table 13, Appendix B.3), network analytical methods were used to examine inter-relationships with CICs. The aim was to illustrate the potential to identify bridging and dominant actors, along with missing, but relevant actors in committee structures. A bespoke Python function was developed to identify bridging actors (Appendix B.4), and to analyze committees and their interdependencies in the city of Würzburg (Appendix A.3: Figure A2).

4. Conclusion and outlook

To conclude, this thesis develops the AIF and uses it to explore avenues of research that lie at the interface between science and practice. Given recent calls highlighting the need for scientifically-sound systems that can be used to support political decision-making and planning processes in city administrations (Kromrey, 2009), the results of this thesis are an important contribution to filling the gap in municipal climate change policy and planning (Klein et al., 2007; Landauer et al., 2015). The thesis systematically and comprehensively explores and analyses the institutional context of mitigation and adaptation, and examines the conditions for successful joint action. At the same time, it does not look at, or evaluate, the effectiveness or efficiency of joint measures compared to isolated mitigation and adaptation measures. For the first time, it provides evidence that the joint institutionalization of climate change mitigation and adaptation in organizational and participatory structures may be a crucial factor for implementing joint measures (Göpfert, Wamsler, & Lang, 2020).

The following sections elucidate in greater detail the theoretical, methodological and practical advancements and value of the AIF, and its applications.

4.1. Theoretical advancements and further research needs

The principle achievement of this thesis, the AIF, is a step towards a new object-related, substantive theory (Kromrey, 2009). This comprehensive system has certain attributes that characterize theory, namely:

- It clearly defines its scope and system boundaries (the city administration as a multiple organization, including co-operation structures with external stakeholders),
- It reduces complexity by defining a set of variables and clear rules for their use (the application of set theory, the Adaptation Assessment and the development of h_{MAX} , for instance). The exploration of further rules and interdependencies is likely to be the subject of future research.
- Following Popper's critical rationalism paradigm (Kromrey, 2009; Popper, 1935), the AIF is likely to evolve into a system of hypotheses that seek to explain relationships between a set of variables such as *ORG* and h_{MAX} . In this regard, the results reported in Paper 2 show that, in the majority of the sampled cities (59.7 %), mitigation and adaptation are organizationally institutionalized in the same department. This result is consistent with a previous, comparative case study on adaptation mainstreaming in eight Bavarian municipalities (Wamsler & Pauleit, 2016).

The AIF is attracting scientific attention. Immediately after its first publication it was taken up by the IPCC Special Report on global warming of 1.5 °C (De Coninck et al., 2018). It is included in the PreventionWeb database (PreventionWeb, 2018), and recommended by the German Committee for Disaster Reduction (DKKV, 2018). Furthermore, a growing number of studies across the world are citing or applying it (Brasche, 2019; Gibbs, 2020; Hernandez, Barbosa, Corral, & Rivas, 2018; Jonca, 2019; Karlsson & Mörlin, 2019; Kim & Grafakos, 2019; Lee, Yang, & Blok, 2020). The AIF was discussed at the symposium "Centre of Urban Ecology and Climate Adaptation" on 15 May 2017 at the Technical University of Munich (Poster presentation, Appendix B.5). It was initially published online in March 2018 (Göpfert, Wamsler, & Lang, 2018), then in a print journal in January 2019 (Göpfert, Wamsler, & Lang, 2019a) (Paper 1, Appendix A.1). Although it is reasonable to assume that the AIF can be applied worldwide, it is unlikely that the specific results for Germany will be replicated in cities in other countries – for instance there are differences in the perception of ecosystem-based adaptation in Sweden and Germany (Wamsler & Pauleit, 2016).

Beyond the applications of the AIF that are considered in this thesis, further empirical research is needed to enhance its robustness. As described in Section 3.2, the main research hypothesis was only tested with *ORG* and *IPI* as independent variables, and h_{MAX} as the dependent variable. Therefore, further tests that include other independent and

outcome variables are needed. Moreover, a comprehensive examination of cities (as shown in Table 8) could be used, for instance, to analyze the action and content consistency between the values of variables, and mitigation and adaptation measures (Martin & Meyerson, 1988). As the applications presented in this thesis show, the AIF can be used as a heuristic for both quantitative surveys, and in-depth case studies.

It can also serve as a methodological basis for constructing empirically-grounded typologies of cities worldwide, with respect to their institutionalization of adaptigation (Kelle & Kluge, 2010; Kluge, 2000; Kuckartz, 2014b; Lamnek, 2005; Promberger, 2011; Schmidt-Hertha & Tippelt, 2011). The framework can be used to examine potential interrelations and correlations between a specific type of city given a set of variables and outcomes. Types can be measured using an “adaptigation consistency” index, to evaluate the consistency of adaptigation institutionalization in city administrations. This index calculates the relative frequency of the mode of the adaptigation value (i.e., absent, partial, fragmented or inclusive) across some, or all, AIF variables (Equation 3).

$$\text{adaptigation consistency} = \frac{H_n(x_{mod})}{n} \quad (\text{Eq. 3})$$

It can be assumed that cities with a high *adaptigation consistency* value are likely to have high policy consistency between the different variables making up the AIF. For instance, the city of Würzburg has an *adaptigation consistency* of 0.857 for inclusive institutionalization. This means that the administration considers adaptigation inclusively in 86% of the institutional features represented by the different variables (variables used to calculate the *adaptigation consistency* are given in Table 8).

4.2. Methodological advancements and practical value

This study lies at the nexus between fundamental research (it addresses a knowledge gap by developing the AIF and testing the main research hypothesis, Sections 3.1 and 3.2), and applied research (it addresses practical needs by, for instance, investigating city advisory committees with respect to the institutionalization of mitigation and adaptation, and providing recommendations, Section 3.3). It articulates science and practice (pragmatic science), aspiring to provide both scientific rigor, and offer practical relevance (Anderson, Herriot, & Hodgkinson, 2001; Töpfer, 2012).

Furthermore, it lies at the nexus between qualitative and quantitative research (Section 2.3). Notably, the AIF is both deduced from established theories and frameworks (top-down), and inductively constructed from empirical data, gathered via document analyses and expert

interviews (bottom-up). Its application (Papers 2 and 3) explicitly adopts a mixed methods (quantitative and qualitative) approach.

The pilot application presented in Paper 3 offers, for the first time, a comprehensive overview and classification of the diversity of official advisory committees in German independent cities (Göpfert, Wamsler, & Lang, 2019b). It uses network analytic methods to analyze their structures, and could help to optimize the conditions for the joint institutionalization and mainstreaming of mitigation and adaptation issues into different, sectoral committees. As Klein et al. (2005) argue, a key difference between mitigation (which tends to be limited to energy and transportation sectors) and adaptation (a broader spectrum covering agriculture, tourism and health, for instance) concerns the actors who are involved in their implementation. The applications presented in Paper 3 confirm this observation for climate-specific committees, but they also highlight how committees can be structured in a way that brings actors together, and supports the mainstreaming of climatic issues.

Furthermore, as Paper 3 demonstrates for the variable *ECA*, practical applications such as network analytics can be used to examine other variables in the framework. For instance, to reveal thematic interconnections between internal and external climate-relevant actors, between internal working groups, or between internal goals and visions. The analysis of committee structures also suggests a hypothetical distinction between “individual” committees that have an advisory function, and “institutional” committees that are better-suited to functioning as knowledge transfer networks.

Finally, with respect to the research objective (Section 1.4), the results of this thesis provide, for the first time, scientific insights and practical tools that can enable cities worldwide to optimize their institutional configuration, in order to initiate and conduct combined mitigation and adaptation actions, and create synergies. The research presented here was conducted in close collaboration with municipal practice. It takes a pragmatic approach, and is intended to meet the needs of cities and other public institutions in a multi-level governance system. Beyond government, non-government organizations, public and private stakeholders, civil society, and the scientific community can all benefit from the AIF and, notably, from the deep insights it offers regarding the role of joint departments, dedicated officials in city administrations, and municipal advisory committees.

The published articles (Appendix A.1 to A.3) present original and innovative research, and outline recommendations for all levels of governance – from national to city scale. On this basis, the results of this thesis contribute to the global goal of limiting climate change, and the related United Nations Sustainable Development Goals on climate action, by developing governance solutions for local action.

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Appendix A – Published / accepted Papers

Appendix A.1: Paper 1

Göpfert, C., Wamsler, C., & Lang, W. (2019). A framework for the joint institutionalization of climate change mitigation and adaptation in city administrations. *Mitigation and Adaptation Strategies for Global Change*, 24(1), 1-21. doi:10.1007/s11027-018-9789-9, published online first on March, 1st 2018.

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A framework for the joint institutionalization of climate change mitigation and adaptation in city administrations

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Received: 5 November 2017 / Accepted: 1 February 2018 / Published online: 1 March 2018
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Abstract Cities are key actors in reducing both the causes of climate change (mitigation) and its impact (adaptation), and many have developed separate mitigation and adaptation strategies and measures. However, in order to maximize outcomes, both scholars and practitioners are increasingly calling for more integrated and synergetic approaches. Unfortunately, related research remains scarce and fragmented, and there is a lack of systematic investigation into the necessary institutional conditions and processes. Against this background, this paper develops a framework to assess and support the joint institutionalization of climate adaptation and mitigation—here called *adaptigation*—in city administrations. This pioneering framework draws upon four key features of bureaucracies: organizational structure, visions and goals, actors, and technology and tools. Illustrated by pilot applications to the cities of Würzburg (Germany) and Mwanza (Tanzania), the framework provides a robust basis for future research, policy recommendations, and the development of context-specific guidelines for national and local decision-makers and officials. It highlights the importance of (i) clearly defined procedures for the implementation of adaptigation into urban planning processes (e.g., with the active involvement of stakeholders in the form of working groups or roundtable discussions), (ii) locally relevant goals and visions, established in collaboration with stakeholders, and (iii) the creation of mitigation and adaptation structures that are supported by the appropriate level of human resources, both within and outside city administrations. In this context, global,

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supranational, and national institutions play an important role in supporting institutionalization by providing targeted funding and promoting adaptation, which requires the development of integrated goals, visions, and legislation.

Keywords Climate policy integration · Institutionalization · Mainstreaming · Mitigation · Adaptation · Urban planning · Municipal planning

1 Introduction

As climate change is a global challenge, the early scientific discourse has focused on the responsibilities and policy options of nation states (IPCC 2014). However, both research and practice show that municipalities are playing an increasingly crucial role (Kern et al. 2005; Bulkeley 2010; UN-Habitat 2010, 2011a; Romero-Lankao 2012; Bulkeley and Betsill 2013; Castán Broto and Bulkeley 2013; Wamsler et al. 2014). The reasons for this include intense local carbon emissions, cities' social, economic, and technical vulnerabilities and, more generally, their legal obligations and opportunities to take effective action (Rosenzweig et al. 2010; Romero-Lankao 2012; Dietrich and Göpfert 2014; Reckien et al. 2014; Säwert 2016; Singer-Posern 2016).

For many years, or even decades, municipalities have been engaged in “mitigation” or “adaptation” activities. In Germany, for example, municipalities have implemented energy-saving measures to improve cost effectiveness, while urban development and planning authorities have sought to protect the urban microclimate through legally binding restrictions on new planning applications (Fickert and Fieseler 2002; Anguelovski and Carmin 2011). However, strategic approaches with a normative vision, concrete goals, and clear measures that are based on mitigation or adaptation concepts are the exceptions (Wamsler et al. 2014). Some recent first steps in this direction are seen in the development of municipal climate mitigation policies (Kern et al. 2005; Bulkeley et al. 2009; Anguelovski and Carmin 2011; Göpfert 2014; Reckien et al. 2014). Initial efforts were limited to the energy sector, with the later addition of other fields such as urban traffic or, very occasionally, some aspects of adaptation (Romero-Lankao 2012; Castán Broto and Bulkeley 2013; Göpfert 2014). The integration of climate adaptation concepts into municipal policy and administrative structures is even newer, but has increased in both scientific and municipal practice in recent years (Anguelovski and Carmin 2011; Deutsches Institut für Urbanistik and Universität Bielefeld 2013; Castán Broto and Bulkeley 2013; Knieling and Roßnagel 2014; Wamsler 2015a; Säwert 2016).

Today, climate change mitigation and adaptation are increasingly seen as two sides of the same coin, i.e., as complementary strategies. Both the scientific community and political institutions, from the international to the local scale, have started to discuss the challenges and the need to integrate these two policy fields (McKibbin and Wilcoxon 2003; Dang et al. 2003; Stehr and Storch 2005; Tol 2005; Wilbanks 2005; Klein et al. 2005, 2007; Fleischhauer and Bornefeld 2006; Ritter 2007; Biesbroek et al. 2009; Laukkonen et al. 2009; Martens et al. 2009; Locatelli 2010; Schüle and Lucas 2011; UN-Habitat 2011a, b; Dymén and Langlais 2013). The exploration of synergies between municipal policy, strategy, and measures by addressing mitigation and adaptation together is a subject of growing scientific and practical importance (Climate Alliance 2007; Klein et al. 2007; Goklany 2007; Mohammadzadeh and Biebeler 2009; Laukkonen et al. 2009; Schüle and Lucas 2011; Schüle et al. 2011, 2016;

Deutscher Städtetag 2012; Moser 2012; Dymén and Langlais 2013; Dietrich and Göpfert 2014; Deutsches Institut für Urbanistik 2015a; Dietrich and Schiffmann 2015; Göpfert 2015; Landauer et al. 2015; Säwert 2016; Zentrum Stadtnatur und Klimaanpassung 2017).

Nevertheless, there is still a lack of systematic, integrative approaches to, and analyses of the joint institutionalization of mitigation and adaptation in local governments. Institutionalization, in this context, is defined as a process that is designed to instill mitigation and adaptation as persistent and consistent aspects of organizational culture, for example, by establishing a vision, goals, roles, rule-based standard operating procedures, and organizational routines, in order to strengthen the legitimacy, foster the stability, enhance the predictability, and support the sustainable inclusion of mitigation and adaptation as an integral part of city administrations (Meyer and Rowan 1977; Scott 2003; van Waarden 2003; Anguelovski and Carmin 2011). However, most research and many guidelines continue to focus either on the implementation of municipal climate mitigation or on adaptation structures, plans, and strategies (Kern et al. 2005; Deutsches Institut für Urbanistik 2011; Göpfert 2014; UN-Habitat 2014; Reckien et al. 2014, 2015; Wamsler 2015b; Runhaar et al. 2017). Others simply focus on synergetic strategies and measures, and examine potentially complementary, conflicting or neutral interdependencies between mitigation and adaptation (Deutsches Institut für Urbanistik 2015a; Landauer et al. 2015). The holistic operationalization or joint institutionalization of these policy fields has received very little attention.

Against this background, the objective of this research was to create a consistent heuristic framework, based on robust theory and empirically specified variables, to assess and support the joint institutionalization of adaptation and mitigation—here called *adaptation*—in city administrations. We call this the *Adaptigation Institutionalization Framework*. It was developed based on an in-depth literature review and interviews with experts. In addition, for our pilot application, we tested the framework on the administrations of the cities of Würzburg (Germany) and Mwanza (Tanzania). Since there is a general consensus in the literature that cities with 50,000 to 1 million inhabitants (so called medium-sized, secondary, intermediate, or intermediary cities) should be given greater attention in the current climate change mitigation and adaptation discourse (UN-Habitat 2011a; Reckien et al. 2014, 2015; UCLG 2016; United Nations 2016; Nel et al. 2016), the framework is predominantly intended for such administrations. While large and megacities have often been regarded as pioneers in the institutionalization of climate mitigation and adaptation policies (Anguelovski and Carmin 2011), most of the world's cities (i.e., medium-sized cities) have been neglected and lack advice and an understanding of the concepts.

2 Methodology

We used a three-step approach to construct the *Adaptigation Institutionalization Framework* (Kelle and Kluge 2010; Kuckartz 2014). First, some broad theoretical concepts were used as a heuristic to deduce a basic analytic coding scheme that formed the basis for a more detailed search of the literature (Section 3.1.1). Second, the assessment of current empirical and theoretical concepts and models on climate change provided further input (Section 3.1.2 and Fig. 1). Third, empirical data from existing studies and guidelines and our own field research helped to refine and revise the framework (Sections 3.2 and 3.3). The following sections (Sections 2.1 and 2.2) describe these steps in more detail.

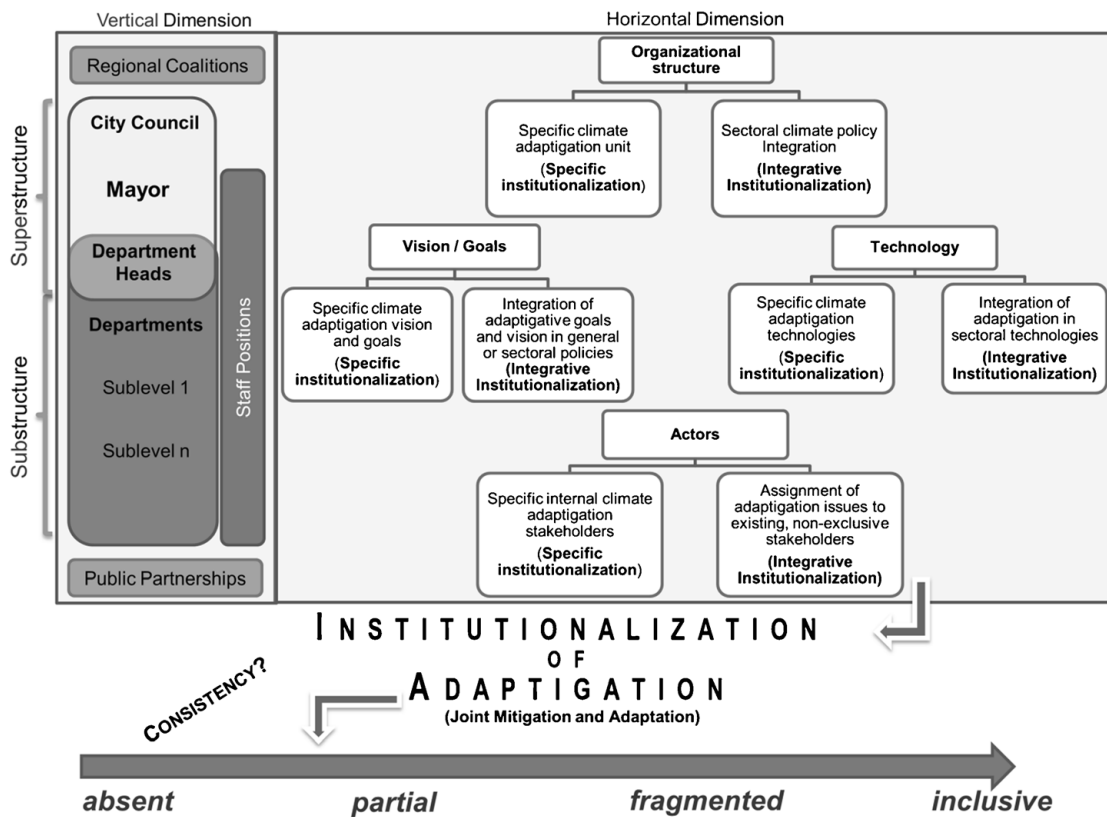


Fig. 1 The *Adaptigation Institutionalization Framework* is an instrument for assessing the joint institutionalization of climate adaptation and mitigation (*adaptigation*) and its hierarchical and sectoral position in the city administration, based on four organizational features (structure, visions/goals, actors, and technology)

2.1 Theoretical foundations

The theoretical basis for the framework was deduced from established theories of sociological institutionalism, organizational culture, and organizational process models. First, we drew upon a key aspect of institutionalization process theory (North 1991; Czada 1995; Scharpf 2000), which argues that mitigation and adaptation must be implemented as an integral part of organizational culture (Martin and Meyerson 1988; Scott 2003; van Waarden 2003). When deeply internalized, they automatically become part of the organizational structure and decision-making processes (Selznick 1957; Scott 2003; Wolf 2005; Thoenig 2011). The second element concerns the four main features of bureaucracies used in the analysis, specifically organizational structure, goals and visions, actors, and technology (see Fig. 1). These factors are derived from *Leavitt's diamond* (Leavitt 1965; Scott 2003) and the work of Malinowski (Gukenbiehl 2002). Third, in order to understand the decision-making processes and operating procedures used by municipalities, we draw upon an organizational process model, and the logic of appropriateness (Allison 1969; March 1999; Scott 2003; van Waarden 2003; March and Olsen 2008).

These general theoretical considerations were linked to climate governance via empirical frameworks regarding the concepts of climate policy integration and mainstreaming (Ahmad 2009; Beck et al. 2009; Mickwitz et al. 2009; Rietig 2012; Wamsler et al. 2014; Wamsler 2015a, b). This led to the creation of criteria designed to identify the horizontal and vertical institutionalization of mitigation and adaptation in different departments of an administration. We express the deep interconnections and inseparability of mitigation and adaptation by the term

adaptigation, which is used to assess the joint implementation of mitigation and adaptation (Fig. 1), as introduced by Langlais (2009) and discussed by Dymen and Langlais (2013).

2.2 Empirical data and analysis

In order to operationalize and adapt the analytic framework to the context of municipal administrative structures and processes, we first assessed the empirical literature (official studies and guidelines) on mitigation, adaptation, or both (Kern et al. 2005; Fleischhauer and Bornefeld 2006; BMVBS and BBSR 2009; Schüle et al. 2011, 2016; Schüle and Lucas 2011; Deutscher Städtetag 2012; Deutsches Institut für Urbanistik and Universität Bielefeld 2013; Göpfert 2014; Reckien et al. 2014; Wamsler 2015b, 2017; Deutsches Institut für Urbanistik 2015b; Hughes 2017). Second, we reviewed interviews with eight municipal officials responsible for climate-related issues¹ to verify the practical relevance of the framework (Zentrum Stadtnatur und Klimaanpassung 2017). Empirical data were evaluated using a qualitative content analysis (Gläser and Laudel 2010; Kuckartz 2014). This led to the identification of eight variables, which were linked to the four features identified in the theoretical analysis, and confirmed their relevance.

Finally, a pilot test of the framework was run on the data collected in two case studies: Würzburg (Germany) and Mwanza (Tanzania). Based on an applied research approach (Greenwood and Levin 2006; Burns 2007), the main author participated in the mitigation and adaptation work of both cities for 7 years. For Würzburg, this involved active participation in all relevant meetings and decision processes, interviews, and document analyses. In Mwanza, most data were collected during interviews with municipal officials and active participation in meetings.

3 Results

This section presents the *Adaptigation Institutionalization Framework*, which is an instrument designed to assess and support the joint institutionalization of climate mitigation and adaptation. The initial, basic framework linked the institutionalization assessment criteria to four main organizational features (organizational structure, goals and visions, actors, and technology/tools) (Section 3.1). Second, the examination of the empirical literature resulted in the operationalization of these features (Sections 3.2 and 3.3). Third, the applicability and the practical fit of the developed variables were tested in two case studies (Section 3.4). The resulting framework is presented in Fig. 1, and its different features/variables are described in the following sections. Table 1 presents a summary and brief explanation of the variables and their respective attributes.

3.1 Theoretical background

3.1.1 Basic analytical features

The framework is based on four features of bureaucracies, which are generally used to systematically assess institutionalization processes (Fig. 1): organizational structure, visions

¹ These interviews were conducted in 2017 by members of the Centre for Urban Ecology and Climate Adaptation at the Technical University of Munich.

Table 1 The *Adaptation Institutionalization Framework*

| Element of the framework | Description |
|--|---|
| Organizational features | <i>Organizational structure</i> : the formal organizational structure (<i>ORG</i>). <i>Goals/Visions</i> : quantitative goals (<i>GOA</i>), qualitative vision (<i>VIS</i>). <i>Actors</i> : internal individual actors (<i>IIA</i>), internal collective actors (<i>ICA</i>), external-internal collective actors (<i>ECA</i>). <i>Technology</i> : informal planning instruments (<i>IPI</i>), formal planning instruments (<i>FPI</i>). |
| Adaptation assessment (joint institutionalization) | <i>Inclusive</i> : Both mitigation and adaptation are jointly implemented within the context of an organizational feature, for example, in the same organizational unit, via joint goals and visions, or allocating staff to both topics. <i>Fragmented</i> : Both mitigation and adaptation are implemented within the context of an organizational feature, but, for example, in different organizational units, with different goals and visions, in different internal committees or in the context of different standard operating procedures. <i>Partial</i> : Either mitigation or adaptation is implemented within the context of an organizational feature. <i>Absent</i> : Some issues may be addressed (e.g., urban greening or energy efficiency), but the topics of mitigation and adaptation are not explicitly implemented within the context of an organizational feature. |
| Horizontal institutionalization | <i>Specific</i> : Mitigation and/or adaptation is exclusively implemented within the context of an organizational feature, for example, in the form of a designated organizational unit, by creating a permanent post, or implementing a standard operating procedure that is designed to integrate mitigation and/or adaptation into urban planning processes. <i>Integrative</i> : Mitigation and/or adaptation is mainstreamed and embedded into existing organizational features, for example, in a non-climate specific unit (e.g., the urban planning department) as a secondary task, or in a sectoral standard operating procedure (e.g., binding planning regulations) that is the responsibility of a sectoral organizational unit. |
| Vertical institutionalization | <i>Superstructure</i> : Within the context of an organizational feature, mitigation and/or adaptation is hierarchically located at the level of the political or executive board. <i>Substructure</i> : Within the context of an organizational feature, mitigation and/or adaptation is hierarchically located at the department level (including its substructures). |

and goals, actors, and technology. They describe that municipal administrations act within a framework structured by rules (organizational structure); they follow institutionalized patterns (visions and goals), where rules are matched with roles (actors). They implement standard operating procedures and routines (technology) consistent with the logic of appropriateness and the organizational process model (Allison 1969; March 1999; Scott 2003), rather than choosing a single best solution in every case. These four features were deduced from *Leavitt's diamond* (Leavitt 1965; Scott 2003) and from general considerations regarding the systemic organization of administrations (Czada 1995; Gukenbiehl 2002; March and Olsen 2008; Pippke 2014).

- *Organizational structure*: This feature refers to the implementation of policies such as mitigation and adaptation within the formal structure (organizational units). It represents the “patterned or regularized aspects of the relationships existing among participants in an organization” (Scott 2003) that are used to implement the organization’s visions and goals. The reliability, stability, and effectiveness of a city administration are enhanced by

persistent, formal, rule-based structures comprising defined roles, positions (mostly independent of specific individuals), routines, and hierarchies (Paulic 2014). Assuming a prevailing logic of appropriateness, it is vitally important to examine rules and structures to understand institutionalization processes, given that the institutional setting provides the frame for action (March 1999).

- *Visions and goals*: This feature comprises normative institutions and the value-driven implementation of policies through setting goals and creating a vision. The development of a qualitative vision is a vital element in institutionalizing climate-related issues (Gukenbiehl 2002). It is often influenced by the overall aims of institutions and organizations in a multi-level governance system (Thoenig 2011). This vision, which is likely to result in operationalized goals, could also be seen as a resource that policymakers can use in negotiations with other departments and stakeholders to enforce their preferences and implement concrete measures. Goals are defined as “conceptions of desired ends - ends that participants attempt to achieve through their performance of task activities” (Scott 2003). They become part of the administration’s organizational culture (Martin and Meyerson 1988). Following March (1999), appropriate and ambitious goals and visions are important to ensure that the organization performs well.
- *Actors*: This refers to the individual or collective actors making up the administrative body, who work to achieve its goals. The existence of specific, committed actors, and their role and power within the organization are seen as crucial factors for institutionalization processes (Scott 2003).
- *Technology*: This represents mechanisms “for transforming inputs into outputs” (Scott 2003) and includes procedures and tools designed to accomplish legally-required, or self-imposed tasks. The *Adaptation Institutionalization Framework* incorporates decision-making and processing by the application of rules, and matching problems with standard operating procedures. Hence, technology is closely associated with defined procedures, roles, and rules that are applied in specific situations.

3.1.2 Horizontal, vertical, and joint dimensions

The review of insights from climate policy integration (Mickwitz et al. 2009; Rietig 2012) and mainstreaming approaches (Wamsler et al. 2014; Wamsler 2015a, b; Wamsler and Pauleit 2016) led to the addition of three analytic dimensions to each of the four features:

- The level of adaptigation (joint institutionalization of adaptation and mitigation). According to Langlais (2009), adaptigation “is a response to climate change that integrates a focus on adaptation with a focus on mitigation, to avoid conflicts and create synergies”.
- The location of mitigation and adaptation within different administrative units and their exclusive, adaptigation-specific implementation (horizontal institutionalization).
- Their location within the hierarchical structure (vertical institutionalization).

3.2 Variables

The analysis of the empirical literature led to the identification of eight variables, which are key to operationalizing the four organizational features described in Section 3.1.1 (Fig. 1).

These variables were selected based on their ability to address both mitigation and adaptation, and the literature that supports the choice of each variable relates to both fields.

3.2.1 Organizational structure

The formal implementation of mitigation and adaptation in the organizational structure, with clearly defined responsibilities, is crucial for institutionalizing climate-related issues in the long term (Kern et al. 2005; Deutsches Institut für Urbanistik 2011, 2015b, Schüle et al. 2011, 2016; Singer-Posern 2016). The organizational implementation of adaptation can also be connected to existing mitigation structures (Reckien et al. 2014; Deutsches Institut für Urbanistik 2015b).

The first variable, *ORG* (*organizational structure*), addresses the formal implementation of mitigation/adaptation in the organization. The focus is on the organizational units that are officially responsible for mitigation and adaptation respectively. Both the document analysis and the interviews found a lack of consistency regarding the implementation of climate issues in the organizational structure (cf. Deutsches Institut für Urbanistik 2011).

The review of the empirical literature revealed a wide spectrum of organizational localization. Mitigation is predominantly integrated into environmental departments (Kern et al. 2005; Schüle et al. 2011), while adaptation is more likely to be integrated into urban planning and development departments (Deutsches Institut für Urbanistik 2015b; Schüle et al. 2016), with some exceptions (Wamsler and Pauleit 2016). Healthcare, civil engineering, urban green space planning, economic development, or even public welfare departments can also lead the implementation of mitigation and adaptation (Deutsches Institut für Urbanistik and Universität Bielefeld 2013; Deutsches Institut für Urbanistik 2015b). In addition to the integration of climatic considerations into these sectoral entities, specific units, staff positions, or central offices designated as responsible for mitigation or adaptation can enhance institutionalization, or at least initiate related activities until other structures and mechanisms are in place (Schüle et al. 2011; Deutscher Städtetag 2012; Deutsches Institut für Urbanistik 2015b).

3.2.2 Visions and goals

The development and official implementation of a vision and goals play a crucial role in institutionalizing climate-related topics in municipal administrations. The following variables were selected to specify this feature:

- *VIS*: The existence of a qualitative mitigation/adaptation vision
- *GOA*: The existence of quantitative mitigation/adaptation goals

Goals and a vision provide a long-term perspective and are an essential part of the institutionalization process (Deutsches Institut für Urbanistik 2011; Schüle and Lucas 2011; Schüle et al. 2011, 2016; Göpfert 2014; Singer-Posern 2016). They should either be included in specific resolutions passed by the city council, or integrated into official urban planning strategies (Schüle et al. 2011; Wamsler 2015b), as mitigation and adaptation are generally considered as vital and inextricable elements of integrated urban development (BMVBS and BBSR 2009).

Examples of normative, guiding visions are resilient spatial structures in the case of adaptation (BMVBS and BBSR 2009; Schüle and Lucas 2011), or a “CO₂-neutral” city in the case of mitigation. Examples of quantitative adaptation targets are limitations on areas that can be developed, or the definition of a specific percentage of green areas (Schüle and Lucas 2011). In the case of mitigation, most cities have set CO₂ reduction goals (Deutsches Institut für Urbanistik 2011; an overview of 200 European urban areas is found in Reckien et al. 2014). Regarding adaptation, Singer-Posern (2016) emphasize the importance of developing a guiding vision that encompasses both mitigation and adaptation. For instance, the German KoBe project (Empowerment of Municipalities at the Local Level to Adapt to Climate Change), conducted by the Wuppertal Institute for Climate, Environment, and Energy highlights the opportunity to develop a joint vision; examples include the “development of resilient energy infrastructures, emission-free, and climate-sensitive city” or the “energy efficient management of adaptation” (Schüle et al. 2016).

The lack of mitigation and adaptation regulation means that it is vital for councils to formulate and commit to local goals and a vision (Deutsches Institut für Urbanistik 2011; Deutsches Institut für Urbanistik and Universität Bielefeld 2013; Schüle et al. 2016). Without a political mandate, measures are conducted “under cover” (Schüle et al. 2016; Singer-Posern 2016), by integrating mitigation or adaptation issues into other sectoral policies and measures.

3.2.3 Actors

The empirical analysis found that appropriate personnel, intra-organizational cooperation, and cooperation with relevant external stakeholders are key to building mitigation and adaptation capacity. Therefore, we chose three variables to assess this feature:

- *IIA*: Internal individual actors
- *ICA*: Internal collective actors
- *ECA*: Internal–external collective actors

Internal individual actors are defined as administrative personnel who coordinate and support the implementation of mitigation and adaptation (Wamsler 2015b; Singer-Posern 2016). Dedicated personnel (“individual champions”, Wamsler 2017) with clearly defined responsibilities play a fundamental role in success (Deutsches Institut für Urbanistik and Universität Bielefeld 2013; Göpfert 2014; Singer-Posern 2016; interviews). These people typically hold positions such as “climate officer” or “city planner,” who is second-in-charge when it comes to climate issues. The interviewees and most of the reviewed studies highlight the advantages that come with the appointment of a central contact point, in the form of a person who is responsible for mitigation and adaptation (e.g., Kern et al. 2005; Schüle and Lucas 2011; Deutsches Institut für Urbanistik 2015b; Singer-Posern 2016).

Internal collective actors are defined as intra-organizational networks, such as interdepartmental, cross-cutting management structures (working groups, see e.g., Deutsches Institut für Urbanistik 2015b). When responsibilities within a municipal administration are fragmented, these structures support the institutionalization of climate-related issues through organizational learning, as participants exchange knowledge and develop a deeper commitment to goals and visions (Kern et al. 2005; Schüle et al. 2011, 2016; Deutscher Städtetag 2012; Deutsches Institut für Urbanistik and Universität Bielefeld 2013; Wamsler 2015b, 2017; Singer-Posern

2016; Hughes 2017). Internal cooperation can also increase opportunities to identify and successfully implement synergetic measures (Deutsches Institut für Urbanistik and Universität Bielefeld 2013).

Internal–external collective actors are defined by informal and formal committees (e.g., advisory councils such as climate committees, Deutsches Institut für Urbanistik 2015b; Singer-Posern 2016), which consist of both internal and external stakeholders. By participating in such committees, individual and collective actors, such as representatives of non-governmental organizations (NGOs) or housing associations can directly influence and enhance the implementation of a vision, goals, and technology (Schüle and Lucas 2011; Schüle et al. 2016). The implementation of these co-production structures has proven vital for institutionalization processes (Kern et al. 2005; Anguelovski and Carmin 2011; Deutsches Institut für Urbanistik and Universität Bielefeld 2013; Wamsler 2015b, 2017; Schüle et al. 2016).

3.2.4 Technology

Here, the focus is on city planning processes and associated tools, which, as the empirical literature and interviews highlighted, are crucial to the successful implementation of both mitigation and adaptation (Kern et al. 2005; Deutsches Institut für Urbanistik 2011; Deutsches Institut für Urbanistik and Universität Bielefeld 2013; Singer-Posern 2016; Zentrum Stadtnatur und Klimaanpassung 2017). We chose two variables to assess this feature:

- *IPI*: Informal planning instruments
- *FPI*: Formal planning instruments

Informal planning instruments are defined as key strategy papers, including the overall municipal climate policy. They are often specifically formulated as climate mitigation or adaptation concepts, or as general planning or development strategies, with the integration of climatic aspects (Kern et al. 2005; Schüle et al. 2011, 2016; Deutsches Institut für Urbanistik and Universität Bielefeld 2013; Göpfert 2014; Wamsler 2015b, 2017; Singer-Posern 2016).

Formal planning instruments refer to the institutionalization of climatic issues through their clearly-defined integration into standard operating procedures, in the form of internal and legal processes, such as administrative actions, or binding planning regulations (Kern et al. 2005; Fleischhauer and Bornefeld 2006; BMVBS and BBSR 2009; Deutsches Institut für Urbanistik and Universität Bielefeld 2013; Schüle et al. 2016; Singer-Posern 2016; Wamsler 2017). All interviewees highlighted that this was a top priority because of the lack of legal provisions.

3.3 Empirical specification of assessment criteria

3.3.1 Operationalization of the adaptation assessment

The term *adaptigation* describes the extent to which adaptation and mitigation are institutionalized into the four features (organizational structure, goals and visions, actors, and technology) of a city administration.

On this basis, the review of the empirical literature and the insights from the interviews identified four potential configurations: *absent*, *partial*, *fragmented*, and *inclusive*. Each of these configurations can be applied to each organizational feature. Logical expressions were used to clarify the attributes and for subsequent use in statistical analyses.

In the following, MA is the level of joint institutionalization, x is the variable, M is mitigation, and A is adaptation (see also Table 1):

- *Absent*: Neither mitigation nor adaptation is formally implemented. Some aspects may be implemented, but the official jargon is not used:

$$\begin{aligned} MA_x &= \text{absent} \\ \text{for } M_x &= 0 \Delta A_x = 0 \end{aligned} \quad (1)$$

- *Partial*: Either mitigation or adaptation is implemented:

$$\begin{aligned} MA_x &= \text{partial} \\ \text{for } (M_x &= 1 \Delta A_x = 0) \oplus (M_x = 0 \Delta A_x = 1) \end{aligned} \quad (2)$$

- *Fragmented*: Both mitigation and adaptation are implemented, but separately:

$$\begin{aligned} MA_x &= \text{fragmented} \\ \text{for } M_x &= 1 \Delta A_x = 1 \Delta \neg(M_x = A_x) \end{aligned} \quad (3)$$

- *Inclusive*: Both mitigation and adaptation are implemented together:

$$\begin{aligned} MA_x &= \text{inclusive} \\ \text{for } M_x &= A_x \end{aligned} \quad (4)$$

3.3.2 Horizontal institutionalization

Like climate policy integration (Ahmad 2009; Beck et al. 2009; Mickwitz et al. 2009; Rietig 2012) and the mainstreaming approach (Wamsler et al. 2014; Wamsler 2015a, b; Wamsler and Pauleit 2016), and supported by insights from the empirical analysis (Schüle et al. 2011; interviews), the *Adaptation Institutionalization Framework* distinguishes two forms of horizontal institutionalization. Either issues are implemented specifically and exclusively, with the sole purpose of either mitigation or adaptation (e.g., an organizational structure with a climate headquarter, Kern et al. 2005; Deutscher Städtetag 2012), or they are organizationally decentralized and mainstreamed in sectoral policies with a different primary focus (e.g., urban development concepts that include aspects of adaptation). In the following, H refers to horizontal institutionalization.

- *Specific* institutionalization:

$$\begin{aligned} H_x &= \text{specific} \\ \text{for } MA_x & \end{aligned} \quad (5)$$

= implemented exclusively and designated as mitigation, and adaptation

- *Integrative* institutionalization:

$$\begin{aligned} H_x &= \text{integrative} \\ &\text{for } MA_x \\ &= \text{secondary to another focal issue} \end{aligned} \quad (6)$$

- *Special case*:

$$\begin{aligned} H_x &= \text{differentiated} \\ &\text{for } MA_x \\ &= \text{fragmented; } M_x \text{ and } A_x \text{ are implemented horizontally, but differently} \end{aligned} \quad (7)$$

3.3.3 Vertical institutionalization

The interviews and review of the empirical literature showed that the location of issues and organizational units within the hierarchy of a city administration reflects their level of power and support (Kern et al. 2005; Deutsches Institut für Urbanistik and Universität Bielefeld 2013; Schüle et al. 2016; Singer-Posern 2016; Hughes 2017). For example, the administration of German cities consists of a political board (city council), a semi-political executive board, and several departments. The executive board is represented by the mayor and department heads. Departments are divided into organizational sublevels (Paulic 2014). Staff positions are located at all hierarchical levels. The empirical analysis underlined this variety in the vertical distribution of mitigation and adaptation issues (Schüle et al. 2011, 2016).

Within the context of vertical institutionalization, the framework distinguishes between the attributes of the “superstructure” (political and semi-political boards—possibly including staff positions) and the “substructure” (departments with several sublevels and staff positions). In the following, *V* refers to vertical institutionalization.

- *Superstructural* institutionalization:

$$\begin{aligned} V_x &= \text{super} \\ &\text{for } MA_x \\ &= \text{implemented at city council or executive board level} \end{aligned} \quad (8)$$

- *Substructural* institutionalization:

$$\begin{aligned} V_x &= \text{sub} \\ &\text{for } MA_x \\ &= \text{implemented at department level} \end{aligned} \quad (9)$$

- *Special case*:

$$\begin{aligned} V_x &= \text{differentiated} \\ &\text{for } MA_x \\ &= \text{fragmented; } M_x \text{ and } A_x \text{ are implemented vertically, but differently} \end{aligned} \quad (10)$$

Table 2 Summary of the Würzburg case study. For an explanation of the assessment criteria, see Table 1

| Organizational feature | Description | Assessment criteria | | |
|--|---|---------------------|-------------|----------------|
| | | Adaptigation | Horizontal | Vertical |
| Formal structure (<i>ORG</i>) | The <i>Stabsstelle Klimaschutz</i> unit is jointly responsible for mitigation and adaptation. | Inclusive | Specific | Substructure |
| Quantitative goals (<i>GOA</i>) | 50% CO ₂ reduction, no explicit adaptation goal. | Partial | Specific | Superstructure |
| Qualitative vision (<i>VIS</i>) | Mitigation vision given in the “Würzburg 2030” document; no explicit adaptation vision. | Partial | Specific | Superstructure |
| Internal individual actors (<i>IIA</i>) | A climate protection officer, responsible for both mitigation and adaptation. | Inclusive | Specific | Substructure |
| Internal collective actors (<i>ICA</i>) | Informal <i>Arbeitskreis Klima</i> committee, members include administrators and politicians. | Inclusive | Specific | Superstructure |
| Internal-external collective actors (<i>ECA</i>) | The advisory committee <i>Klimabeirat</i> with participants from the administration, politicians, universities, and NGOs. | Inclusive | Specific | Superstructure |
| Informal planning instruments (<i>IPI</i>) | Focal climatic concept: <i>Klimaschutzkonzept</i> . | Inclusive | Specific | Superstructure |
| Formal planning instruments (<i>FPI</i>) | Adaptation is part of the formal urban planning process (standard operating procedure), mitigation is already integrated. | Fragmented | Integrative | Superstructure |

3.4 Pilot application

Here, we briefly present two case studies of the cities of Würzburg (Germany) and Mwanza (Tanzania), in order to illustrate the practical application of the framework to the administration of intermediary cities. Würzburg was chosen because of its partnership with the Technical University of Munich; the city provided open access to its data, which were needed to fully test the framework. In addition, Würzburg’s vulnerability to the effects of climate change, especially heat stress, is widely acknowledged (Künstler 2009; Karg et al. 2012) and has already been the subject of various research projects (see Stadt Würzburg 2017). The city of Mwanza, in Tanzania, was chosen because of its participation as a pioneering city in the municipal climate partnership program run by the German Federal Ministry for Economic Cooperation and Development (see Service Agency Communities in One World 2017), and the main author’s involvement in this partnership over a period of 6 years.

An overview of the results is shown in Tables 2 and 3. In short, the analysis found that the city of Würzburg already has a high level of joint institutionalization of mitigation and adaptation within the organizational structure and regarding the involvement of relevant stakeholders. Although the only concrete political commitments concern mitigation goals and visions, notably the creation of a specific unit, this has led, in recent years, to the bottom-up implementation of adaptation into participatory and technological structures.

Unlike Germany, in Tanzania, environmental policies and organizational structures (from the ministerial to the local *mtaa*² level) were found to be coordinated centrally at national level.

² The Swahili term *mtaa* can be translated as “neighborhood” or “street-level”.

Table 3 Summary of the Mwanza case study. For an explanation of the assessment criteria, see Table 1

| Organizational feature | Description | Assessment criteria | | |
|--|---|---------------------|-------------|----------------|
| | | Adaptigation | Horizontal | Vertical |
| Formal structure (<i>ORG</i>) | Environmental units at different sublevels with explicit responsibility for mitigation and adaptation (from the municipal environment department to ward and <i>mtaa</i> level) | Inclusive | Integrative | Substructure |
| Quantitative goals (<i>GOA</i>) | Various qualitative objectives within the National Climate Change Strategy, but no explicit quantitative goals for Mwanza. | Absent | Absent | Absent |
| Qualitative visions (<i>VIS</i>) | Enhancing climate resilience as specified in the National Climate Change Strategy. | Inclusive | Integrative | Superstructure |
| Internal individual actors (<i>IIA</i>) | Environmental management officers at different sublevels. | Inclusive | Integrative | Substructure |
| Internal collective actors (<i>ICA</i>) | Environmental management committee with members from different wards, dealing with both mitigation and adaptation. | Inclusive | Integrative | Superstructure |
| External-internal collective actors (<i>ECA</i>) | Decentralized, community-based organizations in different wards that discuss mitigation and adaptation issues. | Inclusive | Integrative | Superstructure |
| Informal planning instruments (<i>IPI</i>) | The National Climate Change Strategy, supplemented by local by-laws. | Inclusive | Integrative | Superstructure |
| Formal planning instruments (<i>FPI</i>) | Climate issues are considered in the context of urban planning (standard operating procedures). The environmental department gives advice to the planning department. | Inclusive | Integrative | Superstructure |

Examples include the National Climate Change Strategy, or the monitoring and evaluation framework for climate change adaptation in Tanzania, which are mandatory for every city (The United Republic of Tanzania 2012a, b). Additionally, as the reduction of greenhouse gas emissions is not an obligation, adaptation has been declared the highest priority. Most national directives are implemented in local by-laws. Hence, assessing the institutionalization of adaptigation requires a deeper investigation of how national directives and obligations are implemented.

Overall, the main insights obtained from the application of the framework to the two case studies are that (i) horizontal institutionalization is predominantly specific in Würzburg and integrative in Mwanza and (ii) the level of adaptigation is predominantly inclusive in both cities. The issues of mitigation and adaptation are seen as holistic and deeply interconnected, regardless of the dominant type of horizontal institutionalization: in Würzburg issues are specifically allocated to structures, while in Mwanza issues are integrated within a broader, environmental context.

4 Conclusion

The *Adaptigation Institutionalization Framework* is a heuristic, analytic model, developed both for assessing and supporting the joint institutionalization of mitigation and adaptation in municipal administrations, especially medium-sized cities. The framework can also be used by the leaders, decision-makers, and officials of megacities as a heuristic instrument to initiate

discussions about how the institutionalization of climate policies is structured in their administrations. The operationalization of the concept of adaptation provides an urgently needed, innovative approach for science, policy, and in practice.

4.1 Scientific research within and between cities

The framework can be used as a theoretical and empirically grounded instrument for conducting single and comparative (qualitative and quantitative) research studies. At city level, the framework is shown to be a useful basis for investigating interrelations, consistencies, or ambiguities between organizational features and variables. For example, a lack of consistency would manifest in ambitious goals that lack the necessary personnel to reach them (cf. Romero-Lankao 2012). In addition, it provides a heuristic for creating typologies of, and comparisons between, cities based on their level of adaptation, and to generate hypotheses, for example, regarding correlations or interdependencies between the institutionalization of adaptation, and the factual outcomes of concrete measures.

4.2 Practical application and strategy recommendations

The framework has shown to have practical application and is able to create heuristic insights for ongoing processes and developments within city administrations. In addition, it can guide targeted capacity development to support the institutionalization of adaptation. In fact, one of the underlying paradigms of the framework is the focus on, and links to capacity building (cf. Jänicke et al. 2003; Göpfert 2014). All four organizational features can be viewed in relation to how they can enhance action capacities for climate mitigation and adaptation.

The creation and execution of climate responses is likely to be more effective if mitigation and adaptation are jointly institutionalized in the organizational and political structures of city administrations. This means that decision-makers and politicians at all levels (from local to global) should not only consider potential interrelations and synergies between mitigation and adaptation measures, but also make the organizational setting more effective by thinking about the joint implementation of the two issues within the administration. In this context, our findings show that political and intra-organizational commitment to, and support for climate mitigation and adaptation are crucial for institutionalization. Given the very different paths that mitigation and adaptation processes have, as yet, taken in city administrations, it is clearly important to raise related awareness at both the administrative and political levels. Accordingly, the study resulted in three main strategy recommendations, addressing the identified key processes of joint institutionalization presented in Fig. 2:

- *Integration into standard operating procedures.* The ability of a city to fulfill its different tasks requires defined procedures, roles, and rules in specified situations. The importance of these factors, together with legitimate power (such as mandatory legal and internal directives), increases when there is a high level of uncertainty, for instance, with respect to technology (no clear directives and many interpretations of how to carry out tasks, etc.). In this case, the power of (certain) departments increases, and the power of political leaders decreases (cf. Scott 2003). In this context, the integration of adaptation into the standard operating procedures of urban planning processes and associated action programs across different departments seem to be key for successful climate policy outcomes. Some important preconditions for this integration are (1) the definition of clear and binding

organizational responsibilities and workflows, (2) co-production structures such as internal cross-sectoral working groups and/or roundtables, (3) interorganizational networks, such as climate committees for exchanging knowledge and fostering commitment, and (4) dedicated and well-trained personnel who hold a permanent position (possibly with defined adaptation tasks) in the organization.

- *Locally specific goals and visions.* Generating a deep commitment to adaptation within the administration, and from relevant external stakeholders is crucial and seems to depend, among other things, upon the ability to formulate joint local goals and develop a vision with active participation from those concerned (a bottom-up process). Establishing clear structures that allow for such knowledge co-production seems to be crucial for internalizing adaptation within the administration. In addition, it can foster political consistency and reliability.
- *Dedicated officials.* The findings also suggest that officials at all hierarchical levels too often do not consider climatic issues because of a lack of awareness and knowledge regarding potential actions. This issue could be addressed by supporting dedicated staff who have the task of coordinating and promoting inter-departmental actions and information-sharing structures for adaptation. Related organizational responsibilities and job specifications need to be clearly defined—either by creating a specific administrative unit, or by officially integrating the issues of mitigation and adaptation into existing, subject-related units and associated mandates. Within these units, the creation of permanent positions with clear and defined roles and responsibilities for adaptation also seems to be crucial for successful institutionalization and long-term commitment (as opposed to temporary, partial engagement). Capacity building could reduce the need for additional staff/resources and reduce dependence on external experts (a form of human stockpiling).

These three processes can (and should) be supported by national, supranational, and global governance structures (Fig. 2). Higher-level governmental institutions can support the integration of adaptation into standard operating procedures and enhance standardization, by clearly regulating how mitigation and adaptation can be implemented jointly. Furthermore, municipal policy is often oriented by national or global goals and visions; therefore, higher-level institutions are encouraged to explicitly promote the joint integration of mitigation and adaptation. Finally, funding should be provided at national and supranational levels (e.g., the European Union) to support the creation of adaptive structures, such as adaptation managers or design studies.

Although the framework is not designed to provide detailed, operational guidelines that specify context-specific actions, national and local decision-makers as well as officials can use it when considering how to improve the joint institutionalization of mitigation and adaptation strategies in city administrations. It is a robust starting point for obtaining an overview of the factors that should be considered when institutionalizing adaptive structures. Even if it does not dictate, for instance, context-specific elements such as the horizontal implementation of administrative units (either as specific climate departments, or integrated into planning departments), it helps to focus on the key aspects that enhance the implementation of effective organizational structures and procedures. It highlights, for instance, that unclear or ill-defined goals should be made clear and acceptable (for instance, by developing an overall vision and specifying agreed goals); vague, temporary jobs should be turned into permanent positions with clear roles and responsibilities (e.g., the creation of a Climate Protection Officer position); and unclear technology should be transformed into standard operating procedures (e.g., by

listing measures that fall under the scope of the climate mitigation/adaptation plan, or by integrating climate-related issues into formal planning procedures).

4.3 Further research and applications

First and foremost, the framework developed in this paper is based on established theory and empirical data and therefore provides a robust basis for further research. Examples include in-depth case studies or quantitative surveys that can be used to develop context-specific guidelines and strategy recommendations for municipal decision-makers and officials. In addition, further applications to empirical data could provide useful insights for answering questions and identifying patterns regarding the pre-conditions and main requirements for generating and implementing synergetic measures, the best organizational design for particular settings, and limitations on the joint institutionalization of mitigation and adaptation.

We conclude that the *Adaptigation Institutionalization Framework* presented here provides a solid foundation for advancing current knowledge, and can be applied to a broad range of scientific and practical situations. Its relevance and international significance is based on its clear links with organizational theory, policy integration, and mainstreaming approaches in relation to the concepts of mitigation and adaptation.

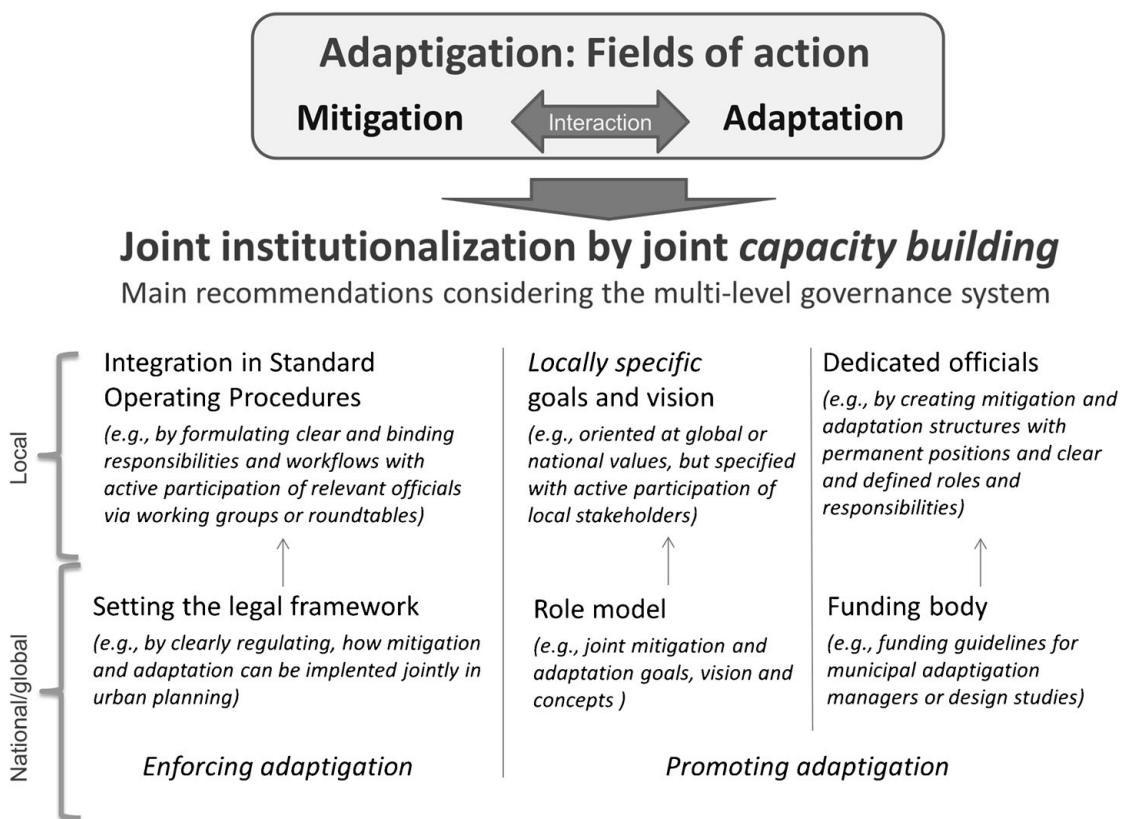


Fig. 2 Recommendations to enhance the joint institutionalization of mitigation and adaptation in city administrations

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Appendix A.2: Paper 2

Göpfert, C., Wamsler, C., & Lang, W. (2020). Enhancing structures for joint climate change mitigation and adaptation action in city administrations – Empirical insights and practical implications. *City and Environment Interactions*, 8, 100052. doi: 10.1016/j.cacint.2020.100052

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Research articles

Enhancing structures for joint climate change mitigation and adaptation action in city administrations – Empirical insights and practical implications

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ARTICLE INFO

Article history:

Received 5 August 2020

Received in revised form 8 October 2020

Accepted 10 October 2020

Available online 24 October 2020

Keywords:

City council

Qualitative comparative analysis

Organizational analysis

Climate policy integration

Environmental policy integration

Mainstreaming

ABSTRACT

Increasing impacts from climate change have prompted international calls for the development of synergetic mitigation and adaptation policies and measures. While cities are seen as key actors in the implementation of related actions, there is a lack of scientific knowledge on the organizational conditions required to achieve this in practice. Our paper addresses this gap. Specifically, we assess the impact of various organizational configurations on the initiation of joint mitigation and adaptation resolutions by city councils in Germany. Our results demonstrate that the joint organizational institutionalization of mitigation and adaptation (i.e. joint departments) can be considered both as a necessary and significant prerequisite for joint implementation, unlike joint climate action plans. The developed methodology and identified conditions present an innovative way forward to assess and improve the initiation of integrated resolutions. Our work contributes to organizational and climate policy integration theories, and can help cities worldwide to optimize their organizational configurations and enhance joint mitigation and adaptation actions.

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1. Introduction

Cities are playing an increasingly important role in governing climate change mitigation and adaptation [1–5]. However, in recent decades, policies, strategies and associated measures have been predominantly implemented in isolation [6], a trend that has been termed the mitigation-adaptation gap or dichotomy [7,8]. At the local level, for instance, municipalities have adopted energy-efficiency measures such as combined heat and power approaches. In parallel, many are increasing their adaptation planning capacity. Examples include the development of urban climate maps [9,10], and regulations and measures to maintain fresh air corridors. However, the underlying decision-making processes tend to be implemented separately or, in the best case, seen as complementary, with climate change mitigation or adaptation seen as a potential co-benefit of other measures. Mitigation and adaptation have been predominantly discussed and implemented as two, separate strategies, both in research [11–14] and practice [12,15,16], “leaving any potential links between the two relatively unexplored” [17].

At the same time, scholars and practitioners are increasingly highlighting the need to create more integrated approaches to increase synergies [15,18–21]. In contrast to the national scale, where mitigation and adaptation issues are predominantly institutionalized in separate ministries, at the

city level, both can be addressed by the municipal administration [15]. However, here again, little is known about how to create the administrative conditions that would enable such synergies on a municipal scale. The Fourth Assessment Report prepared by the Intergovernmental Panel on Climate Change (IPCC) noted that the existing literature does not discuss the role of institutions, or policy concerning inter-relationships between mitigation and adaptation [15]. Furthermore, the IPCC Special Report on Global Warming of 1.5 °C explicitly mentions a “lack of insight on what can enable changes in adaptation and mitigation behavior in organizations and political systems” [3]. The few exceptions have focused on analytical frameworks designed to evaluate the joint integration of mitigation and adaptation in current institutional structures (cf. [3,22]) or local action plans [23], and there is a clear lack of empirical evidence on how specific conditions can support the development of such an organizational setting, and its translation into joint policies or measures.

Previous research has indicated that a shared institutional setting is strongly associated with the ability of municipalities to develop joint mitigation and adaptation actions [23,24] and it has been argued that such an institutional setting could provide a framework for action [25]. More specifically, Bridges [24] highlights that “knowledge of which institutional practices are responsible for sustainable outcomes can be useful to local decision makers in designing policies and

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development plans that influence and govern action toward sustainability in complex urban systems”.

By analogy, previous research has also indicated that such a setting requires the joint institutionalization of mitigation and adaptation issues in different areas, notably: internal organizational responsibilities for climate issues [26–29], highly formalized collaboration structures with external stakeholders [30–32], and official climate action plans [23,33–36]. In general, effective action at the local level requires having sufficient institutional capacity, including appropriate organizational structures and dedicated actors [1,37].

Against this background, we hypothesize that there is a need for the joint institutionalization of mitigation and adaptation in municipalities' organizational structures (i.e., departments and staff), and their climate action plans. This thematic and organizational configuration is expected to minimize contradictions between otherwise sectoral responsibilities, and can help to maximize policy coherence. Going further, we also argue that the joint consideration of mitigation and adaptation in council resolutions is likely to be associated with the development of formal organizational responsibilities (e.g. specific climate mitigation and/or adaptation departments or committees) and associated conceptual guidelines (e.g. action plans) that structure the work of the administration. There are many reasons to focus on city council resolutions. First, it is generally the council that discusses and decides on mitigation and adaptation issues (either jointly or separately). Decisions are formalized through resolutions, which are initially submitted by the city administration. The institutionalization of a synergetic approach to climate mitigation and adaptation requires the two issues to be made a legitimate, permanent and consistent part of the organizational culture [27,38]. The latter takes the form of persistent, formal, rule-based structures with defined roles, routines and hierarchies that govern the day-to-day work of an administration [25,27,38–42].

This empirical paper focuses on: how cities have institutionalized climate change mitigation and adaptation in their administrations; whether there is an association with council resolutions; and, if so, how this association is related to certain conditions. We focus on 72 German cities (described in Section 2), and resolutions that have been passed since 1 January 2015. We adopt a mixed methods approach to empirically explore and test the conditions that support the proposal of joint mitigation and adaptation resolutions (the desired outcome). The results presented in Section 3 show that: (1) only joint organizational institutionalization seems to support the outcome (Section 3.1); and (2) there is also strong statistical evidence that the outcome is associated with joint organizational institutionalization, whereas explicit joint climate action plans are not mandatory (Section 3.2). We conclude by outlining some practical implications and offer some recommendations, identifying further research needs (Section 4).

2. Methods

Our study adopted a two-step approach, in particular, we: (1) explore institutional conditions that might affect the initiation of joint mitigation and adaptation council resolutions, and (2) test the significance of the organizational configuration. The initial sample consisted of all independent German cities (i.e. those that are not part of another governmental entity). These cities were identified using the GV-ISys-dataset provided by the German Federal Office of Statistics [43], and were chosen because of their extended legal and organizational capacities compared to county towns [44,45].

Section 2.1 outlines our conceptual framework, notably the development of independent variables and an outcome/dependent variable. Data collection included questionnaires that were emailed to officials, and information provided on official websites (Section 2.2). In the second step, we conducted a fuzzy set Qualitative Comparative Analysis (QCA) on a set of 15 cities that have specific, climate-related advisory committees [31] to explore relevant conditions (Section 2.3.1). The resultant hypothesis was tested using a non-parametric Kruskal–Wallis test of significance on a larger subset of 72 cities (Section 2.3.2). This

subset was selected as we could clearly assess the desired outcome via their online platforms. For a graphical illustration of the research process, see Fig. 6 (Appendix).

2.1. Conceptual framework

2.1.1. The outcome: initiation of joint city council resolutions

First, we developed a proxy variable to assess the joint implementation of mitigation and adaptation measures in cities, based on co-occurrences of the terms *mitigation* and *adaptation* in official resolutions. Measures that are beyond the competence of the administration must be voted on by the council. The council typically decides on resolutions that are put forward by the administration. We therefore hypothesize that specific organizational aspects of the latter (i.e., responsibilities, climate advisory committees, and climate action plans) influence the content of resolutions (for example, joint mitigation and adaptation measures). Assuming that this is the standard operating procedure, it is clear that the administration can influence the political decision-making process [46]. Decisions on resolutions that include the terms *mitigation* and *adaptation* indicate, at least, the attitude of the administration and the council to these issues and, in the best case, describe complementary or synergetic effects. Although related terms (e.g. nature conservation or energy saving) could also be relevant, here, we concentrate on mitigation and adaptation as our aim is to assess the institutionalization and implementation of structures and measures that use this specific jargon. This is consistent with the idea of a “cultural manifestation” that supports action, and has symbolic and content consistency [47].

The outcome variable was defined as the maximum relative frequency of city council resolutions with the co-occurrence of the word *mitigation* (*Klimaschutz* in German, [M]), and various terms describing adaptation (*Klimaanpassung* [KA], *Stadtklima* [SK], *Klimawandelanpassung* [KWA], and *Klimafolge* [KF]):

$$h_{MAX} = \text{MAX} \left(\frac{H(M \cap A_{KA,SK,KWA,KF})}{H(M) + H(A_{KA,SK,KWA,KF}) - H(M \cap A_{KA,SK,KWA,KF})} \right)$$

Applying set theory, we defined the relative frequency of the co-occurrence of mitigation and adaptation terms as the intersection of the two sets, as shown in Fig. 1.

2.1.2. Conditions: Institutional features

Drawing on the Adaptation Institutionalization Framework [22], we identified three conditions that, hypothetically, could support the proposal of joint council resolutions. Hereinafter, these conditions are called ORG (organizational structure), ECA (external-internal collective actors), and IPI (informal planning instruments); they are described in more detail below.

- **ORG:** This condition represents the implementation of mitigation and adaptation within the formal organizational structure (organizational units). According to our hypothesis, the degree to which mitigation and adaptation are incorporated into the organizational structure affects how municipalities implement joint thinking and action.
- **ECA:** This condition represents official climate advisory committees that are comprised of external and internal experts. The role of these committees is to share information and advise the council on climate mitigation and adaptation measures [31].
- **IPI:** This condition represents climate mitigation and/or adaptation concepts (climate change action plans). They are considered crucial to the successful implementation of mitigation and adaptation measures [23]. According to our hypothesis, joint mitigation and adaptation concepts could affect the proposal of joint resolutions by the council.

We refer to aspects of (ecosystem-based) adaptation mainstreaming frameworks [19,28,29,48], and the climate policy integration framework [49–52], as a thematic modification of the environmental policy

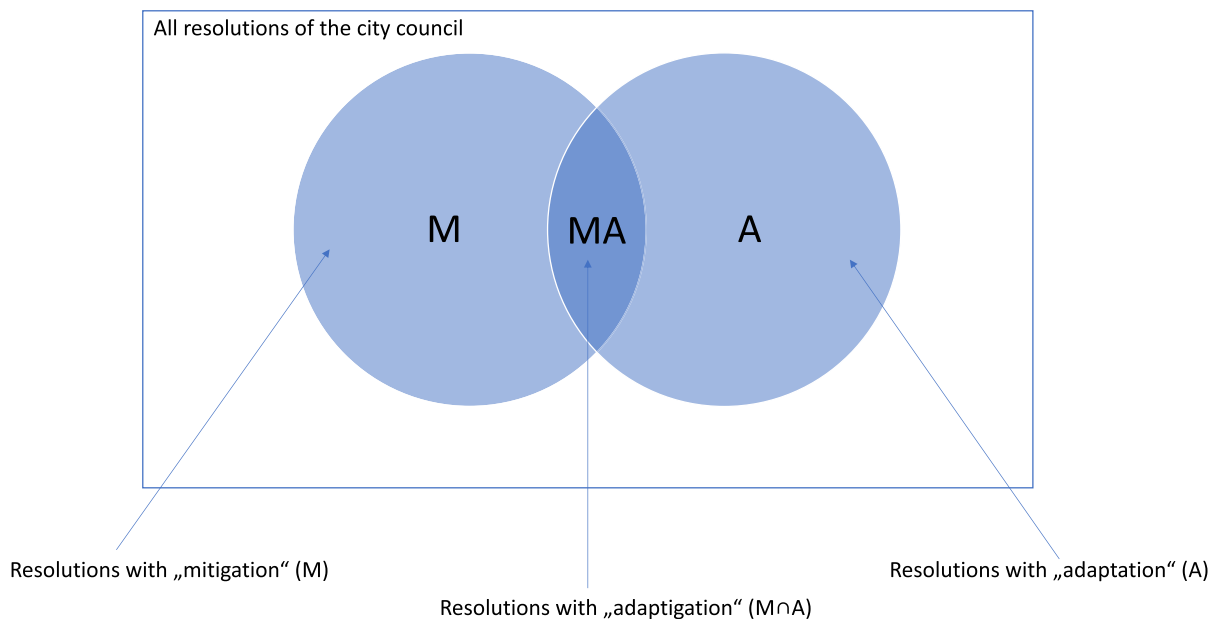


Fig. 1. Application of set theory to define the outcome.

integration approach [41,53,54]. Consequently, this study focuses on the integration of climate mitigation and adaptation into the decision-making structures of administrative units, with a particular focus on departments, plans or committees where there might be mutual benefits between the two issues. In accordance with the outcome variable (Section 2.1.1), this paper considers institutional conditions that are explicitly and specifically aimed at mitigation and adaptation (e.g., dedicated climate departments, climate committees, and climate action plans). These conditions emerge from the consideration of four theoretical approaches to decision-making: the logic of appropriateness [25,27,55–57]; theories of organizational culture [47]; elements of coalition theory [58]; and the multiple streams approach [59].

2.2. Data collection

The primary source of data was online platforms provided by city councils (known as the *Ratsinformationssysteme*), which record resolutions that have been passed. First, we examined how often the terms *Klimaschutz* (mitigation), *Klimaanpassung*, *Stadtklima*, *Klimafolge* and *Klimawandelanpassung* (adaptation) occurred separately in the sample of 72 German cities during the period 1 January 2015 to 30 April 2019. This sample is drawn from a total of 107 independent German cities (federal city states and cities that are under the control of the district were excluded). Independent cities are responsible for both local issues, such as granting planning permission and other, higher-level services that are usually institutionalized at the district level. Our sample comprised 60.98% of all independent German cities with up to 99,999 inhabitants, 70.91% of those with between 100,000 and 500,000 inhabitants, and 72.72% of all larger independent German cities. Then, to make an initial assessment of the joint implementation of mitigation and adaptation (the outcome variable), we searched for occurrences of both terms in one resolution during the same time frame. Furthermore, we collected data from the websites of all 72 cities regarding the implementation of mitigation and adaptation in their organizational structure.

To deepen our understanding of explanatory variables/conditions, we emailed questionnaires to officials working at a subset of 15 German cities. These cities were chosen because they had established a climate advisory committee. Questions concerned the joint implementation of mitigation and adaptation in the organizational structure, the climate advisory committee and climate action plans. This, smaller sample, comprised 9.76% of all independent German cities with up to 99,999 inhabitants, 23.64%

of those with between 100,000 and 500,000 inhabitants, and 18.18% of all larger independent German cities.

2.3. Data analysis

Data were analyzed using QCA (for an overview, see [60]), and non-parametric, quantitative analyses [61]. Qualitative data was coded based on the degree of joint institutionalization of mitigation and adaptation [22] as follows: absent (neither mitigation nor adaptation), partial (either mitigation or adaptation), fragmented (mitigation and adaptation, but separately), and inclusive (mitigation and adaptation jointly implemented). The following distinctions are empirically relevant for this study:

$$ORG = \begin{cases} \text{inclusive : mitigation and adaptation in the same department} \\ \text{fragmented : mitigation and adaptation in different departments} \\ \text{partial : either only mitigation or adaptation organizationally implemented} \end{cases}$$

$$ECA = \begin{cases} \text{inclusive : committee with focus on both mitigation and adaptation} \\ \text{partial : committee with focus only on mitigation} \end{cases}$$

$$IPI = \begin{cases} \text{inclusive : joint climate change mitigation and adaptation action plan} \\ \text{fragmented : separate mitigation and adaptation action plans} \\ \text{partial : either only mitigation or only adaptation action plan} \end{cases}$$

2.3.1. Qualitative comparative analysis

In a preliminary step, we conducted an in-depth study of 15 German cities. Here, we used a fuzzy set QCA to investigate possible causal relations between conditions (ORG, ECA, IPI), and the (desired) outcome (h_{MAX}).

QCA uses set theory and Boolean algebra to analyze complex configurations of conditions that may equifinally lead to an outcome. By assessing cause-effect relationships, the method enables a cross-case qualitative comparison of specific configurations of conditions and their contribution to an outcome. If the set of cases with a specific condition, or a combination of conditions (X), is a subset of the set of cases with the outcome (Y), then X leads to, and can be considered sufficient for Y. On the other hand, if the set of cases with Y is a subset of X, X has to be present for Y to occur, and thus can be considered necessary for Y. In reality, only a few conditions or their combinations are perfectly sufficient or necessary for the outcome. To assess closeness to perfect sufficiency, the set-theoretic term “consistency” is defined as the degree to which cases with X are a subset of the

set of cases with Y. The term “coverage” indicates the extent to which Y is covered by a specific condition or a specific combination of conditions (X), representing the empirical relevance of the different conditions or their combinations. In the case of necessity, consistency indicates the degree to which cases with Y are a subset of X, whereas coverage “assesses the relevance of the necessary condition” [62], which means the degree to which X is covered by Y.

In contrast to the basic crisp-set QCA [63], in which only the values “1” and “0” can indicate the presence or absence of a condition or outcome, fuzzy set QCA can consider partial set memberships between the values 0.0 (non-membership) and 1.0 (full membership) [62]. In this study, we used fuzzy sets to calibrate the outcome variable h_{MAX} .

The justification and rules for the calibration (assigning set membership scores to cases) were as follows:

- **Conditions:** We hypothesize that inclusive institutionalization leads to the outcome, and the other attributes (i.e. absent, partial, and fragmented) do not. Hence, the set membership score for conditions with the attribute “inclusive” is set to 1. In other words, mitigation and adaptation are institutionalized in the same organizational unit, are the joint focus of a committee, or are combined in one concept. In all other cases the score is set to 0 (Table 1).
- **Outcome:** The outcome variable indicates the co-occurrence of the terms mitigation and adaptation in official documents (the desired outcome). It is measured as their relative co-occurrence in relation to their individual occurrence. The direct method [62] was used for calibration, and to set the threshold of full membership ($Y = 0.95$) at $h_{MAX} = 0.1$, of full non-membership ($Y = 0.05$) at $h_{MAX} = 0$, and the crossover point at $h_{MAX} = 0.055$ (Table 1).

QCA analyses were run using fs/QCA software [64].

2.3.2. Quantitative analysis

Following the exploratory fuzzy set QCA, we conducted statistical analyses on the full set of 72 cities. Here, the aim was to discover potential relationships between the administrative organization and the co-occurrence of mitigation and adaptation in council resolutions. As the dataset did not meet the conditions necessary for parametric statistical tests (non-normal intra-group distribution, heteroscedasticity and heterogeneity were found), we conducted a non-parametric Kruskal–Wallis test [65], combined with Dunn *post-hoc* tests, adjusted by a Holm–Bonferroni correction [66,67]. The Kruskal–Wallis test was used to compare h_{MAX} medians across groups with different degrees of joint institutionalization. The null hypothesis was that medians in all four groups (absent, partial, fragmented, inclusive) were equal, while the alternative hypothesis assumed an inequality between at least two groups.

Analyses were run using the R development environment (version 3.6.0 [68]), together with the Dplyr and TidyR data manipulation packages

[69,70], the FSA package for Dunn *post-hoc* tests [71], and ggplot2, ggbeeswarm and Rcompanion for graphics [72–74].

Outcome values for all 72 cities, underlying co-occurrences (Section 2.1.1) and the degree of organizational institutionalization (Section 2.1.2) are accessible via Mendeley Data [75].

3. Results

The results suggest that the joint institutionalization of mitigation and adaptation in the organizational structure of a city administration is a key condition for the joint implementation of mitigation and adaptation in the council’s resolutions:

- The exploratory QCA run on a small subset of 15 German cities found that the joint institutionalization of mitigation and adaptation within the organizational structure is necessary for the outcome (Section 3.1.1).
- Furthermore, the exploratory QCA revealed that joint institutionalization within the organizational structure is sufficient to achieve the intended outcome (i.e. stand-alone or in combination with a joint mitigation and adaptation advisory committee). At the same time, explicit joint climate action plans were found to be neither necessary nor sufficient (Section 3.1.2).
- Building on the insights of the exploratory analysis, the non-parametric Kruskal–Wallis test was run on the bigger dataset of 72 German cities, and confirmed the results of the QCA. Strong evidence was found to support the idea that the co-occurrence of mitigation and adaptation in resolutions increases significantly when mitigation and adaptation are jointly implemented in the organization (Section 3.2). There was also strong evidence that co-occurrence is higher in cities with mitigation and adaptation plans (even though they might be dealt with separately) than cities with only mitigation plans.

Both samples show that the inclusive institutionalization of mitigation and adaptation in one department is most common in independent German cities (relative frequency of org = inclusive is 80% in the sample of 15 cities, and 60% in the sample of 72 cities). Furthermore, we observed that 22% of the 72 analyzed cities have joint mitigation and adaptation plans, 44% have separate plans, 31% have only mitigation plans, and 3% do not have a climate action plan at all. The overview of climate action plans given in our study (cf. [75]) supplements existing datasets [34,35,76,77].

3.1. Identifying the key factor: organizational institutionalization

The fuzzy set QCA was applied to the subset of 15 cities to, first, analyze the consistency and coverage of necessary, and then sufficient conditions and configurations [78,79].

3.1.1. Necessary conditions

Our analysis found that the joint institutionalization of mitigation and adaptation in the organizational structure (i.e. departments or staff responsible for both mitigation and adaptation) can be considered necessary for the joint consideration of mitigation and adaptation in council resolutions, with a consistency of 93.6% (Table 2). Specifically, 93.6% of cases where the outcome is observed have jointly

Table 1
The QCA dataset.

| City | ORG | ECA | IPI | h_{MAX} | Y |
|----------------|----------------|---------------|----------------|-----------|------|
| Aschaffenburg | 1 (inclusive) | 0 (partial) | 0 (fragmented) | 0.194 | 1.00 |
| Bonn | 1 (inclusive) | 1 (inclusive) | 1 (inclusive) | 0.109 | 0.97 |
| Darmstadt | 1 (inclusive) | 0 (partial) | 0 (fragmented) | 0.045 | 0.37 |
| Frankfurt/Main | 0 (fragmented) | 0 (partial) | 0 (fragmented) | 0.032 | 0.22 |
| Frankfurt/Oder | 1 (inclusive) | 1 (inclusive) | 0 (partial) | 0.227 | 1.00 |
| Göttingen | 0 (fragmented) | 1 (inclusive) | 1 (inclusive) | 0.050 | 0.43 |
| Heidelberg | 1 (inclusive) | 0 (partial) | 0 (fragmented) | 0.063 | 0.62 |
| Kaiserslautern | 1 (inclusive) | 0 (partial) | 0 (fragmented) | 0.327 | 1.00 |
| Karlsruhe | 1 (inclusive) | 0 (partial) | 0 (fragmented) | 0.154 | 1.00 |
| Kempten | 0 (partial) | 0 (partial) | 0 (partial) | 0 | 0.05 |
| Magdeburg | 1 (inclusive) | 0 (partial) | 0 (fragmented) | 0.090 | 0.91 |
| Mülheim | 1 (inclusive) | 1 (inclusive) | 1 (inclusive) | 0.253 | 1.00 |
| Osnabrück | 1 (inclusive) | 0 (partial) | 0 (fragmented) | 0.191 | 1.00 |
| Potsdam | 1 (inclusive) | 1 (inclusive) | 1 (inclusive) | 0.038 | 0.29 |
| Würzburg | 1 (inclusive) | 1 (inclusive) | 1 (inclusive) | 0.133 | 0.99 |

Table 2
Analysis of necessary conditions (capital letters indicate the presence of a condition, lower case letters represent the absence of the condition), Result $ORG \leftarrow Y$.

| Condition | Consistency | Coverage |
|-----------|-------------|----------|
| ORG | 0.9355 | 0.8458 |
| org | 0.0645 | 0.2333 |
| ECA | 0.4313 | 0.7800 |
| eca | 0.5686 | 0.6856 |
| IPI | 0.3392 | 0.7360 |
| ipi | 0.6608 | 0.7170 |

Table 3

Truth table for the fuzzy set QCA. The outcome is considered present above the raw consistency threshold ≥ 0.8 . R indicates logical remainders (limited diversity).

| Conditions | | | Outcome Y | Raw consistency | Cases (number in brackets indicate the membership score for the outcome) |
|------------|-----|-----|-----------|-----------------|--|
| ORG | ECA | IPI | | | |
| 1 | 1 | 1 | 1 | 0.8125 | 4 Bonn (0.97), Mülheim (1), Potsdam (0.29), Würzburg (0.99) |
| 1 | 1 | 0 | 1 | 1 | 1 Frankfurt/Oder (1) |
| 1 | 0 | 1 | R | R | 0 |
| 1 | 0 | 0 | 1 | 0.8429 | 7 Aschaffenburg (1), Darmstadt (0.37), Heidelberg (0.62), Kaiserslautern (1), Karlsruhe (1), Magdeburg (0.91), Osnabrück (1) |
| 0 | 1 | 1 | 0 | 0.43 | 1 Göttingen (0.43) |
| 0 | 1 | 0 | R | R | 0 |
| 0 | 0 | 1 | R | R | 0 |
| 0 | 0 | 0 | 0 | 0.135 | 2 Frankfurt/Main (0.22), Kempten (0.05) |

institutionalized mitigation and adaptation. The analysis of other potentially necessary conditions (ECA and IPI, and the negations of all conditions) found no significant values.

3.1.2. Sufficient conditions

A truth table, which presents all possible conditional configurations and their contributions to the outcome Y (Table 3) was used to investigate sufficient conditions. Rows with a raw consistency of at least 0.8 were considered sufficient for the outcome [80].

The primitive expressions resulting from Table 3 were minimized using the Quine–McCluskey algorithm to the complex solution without considering counterfactual cases (i.e. configurations with logical remainders):

$$ORG * ipi + ORG * ECA \rightarrow Y$$

In the equation above, the asterisk (*) indicates a logical AND, while the plus sign (+) stands for a logical OR. The complex solution, therefore, suggests that the combination of joint organizational institutionalization and the absence of joint conceptual institutionalization (with a solution term coverage of 63.6%, and a consistency of 86.3%), or the combination of joint organizational institutionalization and a joint mitigation and adaptation advisory committee (with a solution term coverage of 39.2%, and a consistency of 85%) lead to the outcome (Table 4).

The parsimonious, intermediate solution (Table 5) considers easy and difficult counterfactuals that might result from limited empirical diversity, that is, logical remainders [81]. This logically simplified solution shows that joint organizational institutionalization is alone sufficient for the outcome, with coverage of 93.5% and consistency of 84.6%:

$$ORG \rightarrow Y$$

Although researchers have questioned the drawbacks and causal fallacies of different solution types under limited empirical diversity [82,83], the dominance of the condition ORG is obvious. At the same time, there seems to be no need to explicitly consider joint climate mitigation and adaptation concepts to achieve the desired outcome. The analysis found that the existence of a climate advisory committee with a joint mitigation/adaptation focus, together with inclusive organizational institutionalization is sufficient for the outcome.

Table 4

Complex solution: solution consistency = 0.8458 and solution coverage = 0.9355, solution term: $ORG * ipi + ORG * ECA \rightarrow Y$.

| Conditions | Raw coverage | Unique coverage | Consistency | Cities |
|------------|--------------|-----------------|-------------|---|
| ORG*ipi | 0.6359 | 0.5438 | 0.8625 | Aschaffenburg, Darmstadt, Frankfurt/Oder, Heidelberg, Kaiserslautern, Karlsruhe, Magdeburg, Osnabrück |
| ORG*ECA | 0.3917 | 0.2995 | 0.85 | Bonn, Frankfurt/Oder, Mülheim, Potsdam, Würzburg |

Finally, the results of the QCA of this small-N set of cities suggests that – according to our hypothesis – the joint organizational institutionalization of climate change mitigation and adaptation is a necessary and sufficient prerequisite for the initiation of joint climate change mitigation and adaptation in the decision-making arena.

3.2. Significant association between institutionalization and resolutions

We reassessed the results of the QCA on a bigger dataset, by applying a non-parametric Kruskal–Wallis test to the subset of 72 German cities (Section 2.3.2). In accordance with our hypothesis and previous findings, the boxplot (Fig. 2) suggests that there is a significant relationship between organizational institutionalization and h_{MAX} .

The results of the Kruskal–Wallis rank sum test supported insights from the QCA and provided strong evidence to reject the null hypothesis (i.e. no difference between h_{MAX} medians in the four groups). We found a significant difference between h_{MAX} medians in at least one pair of groups (chi-squared(3) = 27.989, $p < 0.001$). More specifically, subsequent Dunn *post-hoc* tests [66] applying Holm’s Sequential Bonferroni correction [67] found that the only significant difference in values was between cities with inclusive institutionalization of mitigation and adaptation (Fig. 3b), and cities with absent, partial or fragmented institutionalization (Fig. 3a):

- Absent – inclusive: $z = -3.238, p = 0.0060$
- Partial – inclusive: $z = 4.2142, p = 0.0002$
- Fragmented – inclusive: $z = 2.772, p = 0.0223$

Our results suggest that the co-occurrence of mitigation and adaptation in official council resolutions increases with the inclusive, joint organizational implementation of mitigation and adaptation (Fig. 3).

Interestingly, even at partial institutionalization, co-occurrences occur. Although these cities address mitigation and adaptation together, the lack of an organizational structure means that h_{MAX} is significantly lower than in cities with inclusive institutionalization.

Furthermore, the analysis of the distribution of climate action plans across the 72 cities showed that – in line with the results of the QCA (Section 3.1.2) – joint plans that contain both mitigation and adaptation (inclusive) actions, are not an obligatory condition for achieving a high h_{MAX} . As Fig. 4 indicates, separate mitigation and adaptation plans (fragmented) lead to a nearly equal h_{MAX} median, while cities with only mitigation plans (partial) are, in general, unlikely to achieve high values

Table 5

Parsimonious and intermediate solution: solution consistency = 0.8458 and solution coverage = 0.9355, solution term: ORG → Y.

| Condition | Raw coverage | Unique coverage | Consistency | Cities |
|-----------|--------------|-----------------|-------------|---|
| ORG | 0.9355 | 0.9355 | 0.8458 | Aschaffenburg, Bonn, Darmstadt, Frankfurt/Oder, Heidelberg, Kaiserslautern, Karlsruhe, Magdeburg, Mülheim, Osnabrück, Potsdam, Würzburg |

of h_{MAX} . To investigate this in more detail, we applied a Kruskal–Wallis rank sum test in combination with *post-hoc* tests, and found strong evidence of a difference between the medians of partial institutionalization and fragmented or inclusive institutionalization (chi-squared(3) = 24.048, $p < 0.001$):

- Partial – fragmented: $z = 4.1175, p = 0.0002$
- Partial – inclusive: $z = 3.5186, p = 0.0022$

4. Discussion and conclusions

The results show a clear association between joint institutionalization within the organizational structure and resolutions that include a complementary combination of climate change mitigation and adaptation. In this section, we discuss how these insights relate to existing research on climate policy mainstreaming and local contexts (Section 4.1), and outline further research questions regarding the ability of individuals to cover the full range of related tasks (Section 4.2). Finally, we conclude with some policy recommendations for cities worldwide (Section 4.3).

4.1. Practical implications

Municipalities worldwide are increasingly forced to address the challenge of climate change mitigation and adaptation. Consequently, the question of the internal organization of city administrations needs urgent attention. The primary approach in this context is to integrate or *mainstream* mitigation and adaptation issues into different, specialized administrative units, each with their specialized, standard operating procedures [84]. In this context, our results confirm and support findings from the existing literature (for instance, [85]) that a coordinated organizational unit seems to be necessary to initially facilitate this process, notably to ensure the development and implementation of joint measures.

In addition, the horizontal dimension of climate policy integration and mainstreaming indicates the importance of strategies that integrate climate mitigation and adaptation into the visions, goals, regulations, standard operating procedures and instruments of less-powerful

organizational entities [29]. One key insight (and drawback) of the climate policy integration approach is, however, that climate considerations are, in practice, not integrated into all sectoral policies to the same extent, or with the same degree of success. This is thought to be because they can be seen as difficult to politically integrate and combine with other sectoral objectives [52].

Our results, and the mainstreaming literature, suggest that integration could be accelerated by an administrative unit dedicated to supporting the implementation and mainstreaming of mitigation and adaptation. In this context, as climate change adaptation is an interdisciplinary issue in itself, the German Association of Cities recommended the creation of a specific coordination office [86]. Given the cross-sectional nature of climate change adaptation, this office could identify potential synergies and conflicts, structure working processes, and assign tasks to specialized administrative units. The need for coordination is also apparent when thinking about joint measures. As the example of Frankfurt/Main shows (Fig. 5), the individual institutionalization of mitigation and adaptation in two departments can strengthen the implementation of either mitigation or adaptation measures separately. However, a coordination unit or officer could help to bring the two issues together and create synergies.

Nevertheless, although this approach may help to increase the number of joint council resolutions, it is not necessarily the only way forward. In fact, we found for instance that in our dataset of 72 German cities, 19 had only focused on mitigation, making it the responsibility of a specific department. But this does not imply that these cities are not taking action on adaptation; the terms ‘mitigation’ and ‘adaptation’ are relatively new jargon used to refer to problems and measures that other policy fields have been working on for decades [30,87]. Our analyses showed that there are adaptation-related resolutions even in cities that have only put in place organizational structures specifically responsible for mitigation (see Fig. 2).

4.2. The role of individual capacity

The current literature (for instance, [22]) suggests that the potential success of inclusive institutionalization also depends on factors, such as

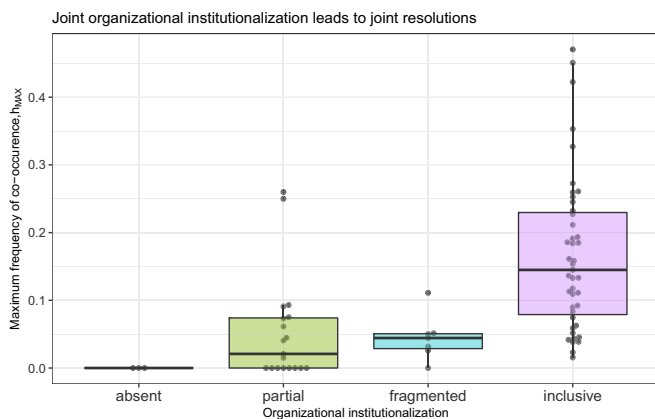


Fig. 2. Distribution of the maximum frequency of the co-occurrence of mitigation and adaptation terms in council resolutions taken in 72 cities in the period 1 January 2015 to 30 April 2019 (h_{MAX}), grouped by organizational institutionalization of mitigation and adaptation.

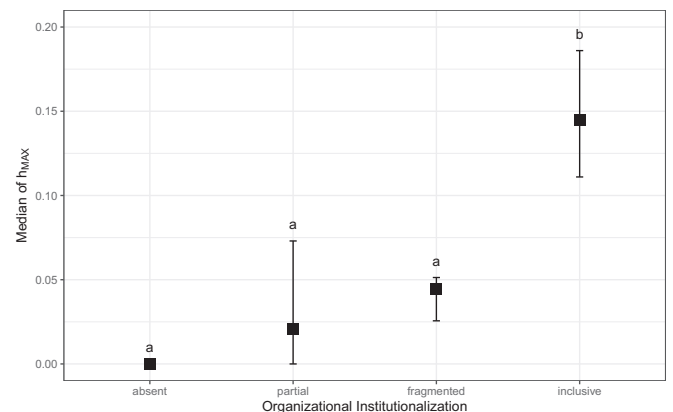


Fig. 3. Mean values and error bars for h_{MAX} vs. organizational institutionalization for mitigation and adaptation in 72 cities. Error bars represent 95% confidence intervals for the median with the percentile method. Groups sharing a letter are not significantly different.

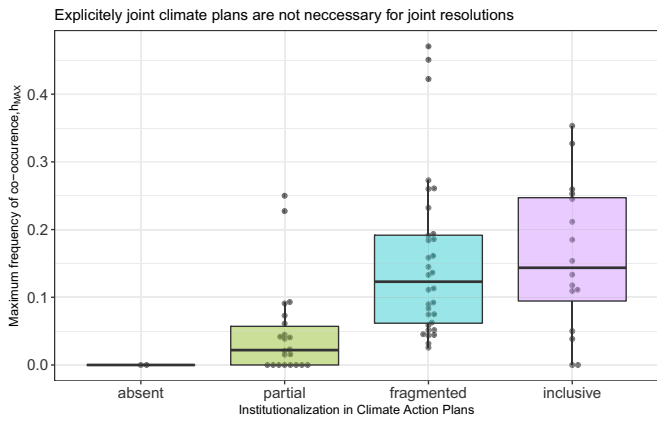


Fig. 4. The distribution of the maximum frequency of co-occurrences of mitigation and adaptation in resolutions taken by 72 city councils in the period 1 January 2015 to 30 April 2019 (h_{MAX}), grouped by the type of local climate action plans (inclusive: joint mitigation and adaptation plan, fragmented: separate plans, partial: only mitigation plan, absent: no plans).

staff capacity. The example of the KOBE project shows that the joint institutionalization of mitigation and adaptation, without adequate staffing, is difficult. In the latter case, the over-worked climate mitigation officer had sole responsibility for a broad field of action [88]. The importance, and need for sufficient personnel has been noted in many German cities [87,89].

Furthermore, staffing capacity, and successful, inclusive institutionalization in general, may also depend on key actors, who initiate or support the creation of the joint administrative unit. Recent studies (e.g., [36,88]) suggest that policy entrepreneurs [59] or “individual champions” [32], such as members of the council, the mayor, leading officials, or even actors

from external institutions (e.g., local universities or interest groups) can influence both staff, and their vertical or horizontal position within the hierarchical structure. For example, mitigation departments that lack political support for the integration of adaptation [88] may also lack support for adequate staffing. These basic, organizational decisions can affect the department’s power within the administration’s formal structure, and informal coalitions [27]. Other potentially relevant factors are the qualifications, professional skills, cognitive and relational capacities, and the autonomy of staff [90–92]. According to Göpfert et al. [22], “officials at all hierarchical levels too often do not consider climatic issues because of a lack of awareness and knowledge regarding potential actions”. Hence, the allocation of issues to different officials may also open up an opportunity to recruit competent staff who have scientific expertise in the field, and are able to develop “the cognitive and emotional capacity to establish trust, communicate inclusively, (...) while at the same time dealing with increasing complexity and uncertainty” [92]. However, these issues, and other potential drivers such as sources of funding, or general experience in cross-cutting issues, are beyond the scope of this paper, and may be the subject of further research.

A deeper look into the QCA dataset (Table 1) suggests the following hypothesis: cities that have an inclusive organizational structure, but with different officials dedicated to mitigation and adaptation, have higher potential to effectively act, both individually and jointly (Fig. 5). A brief, unrepresentative comparison of the city of Frankfurt/Main (org = fragmented) with cities that have an inclusive organizational institutionalization highlights the following patterns (Fig. 5):

- In Frankfurt/Main, mitigation and adaptation are separately implemented in two organizational units: the energy department (mitigation) and the environmental department (adaptation). In terms of resolutions, the city seems to be equally active in mitigation and adaptation, although there are fewer co-occurrences of the two terms in resolutions.
- In Kaiserslautern, Osnabrück, Darmstadt and Würzburg, mitigation and adaptation are located in the same department. In line with

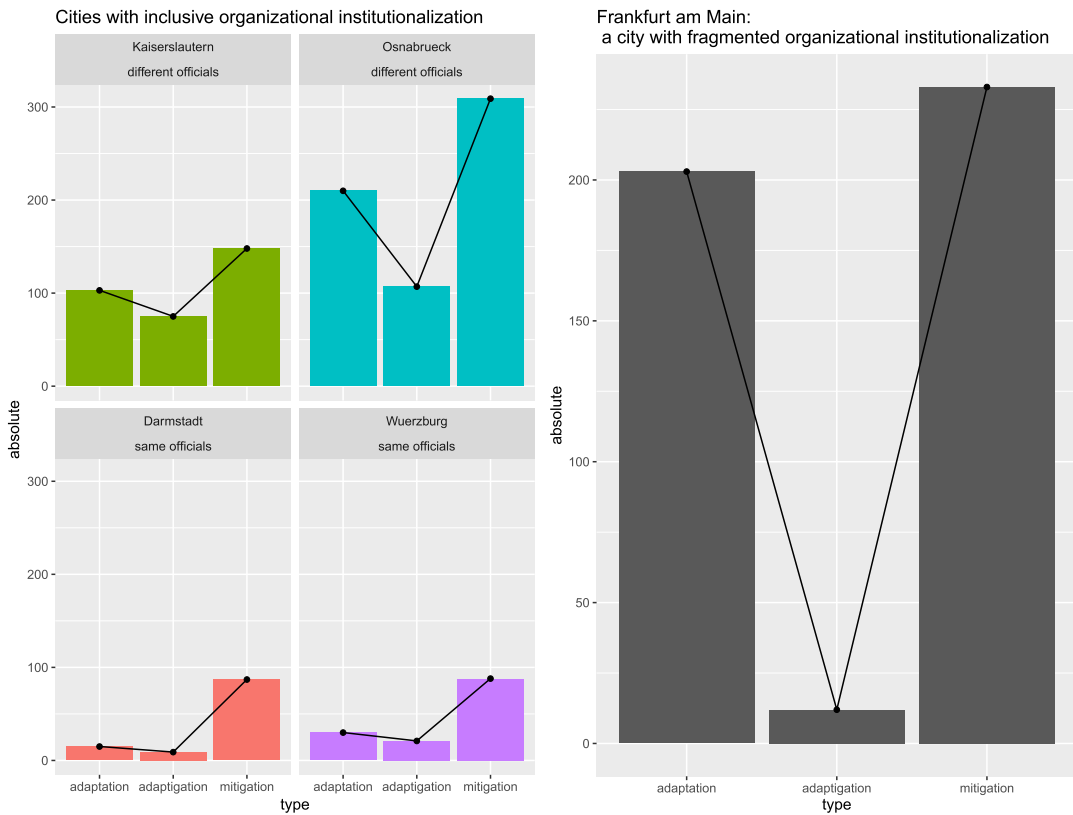


Fig. 5. Cities with different officials working in the same climate department seem to initiate mitigation and adaptation resolutions nearly equally, while in cities that lack a clear division of responsibilities within the climate department, adaptation remains an add-on (fewer resolutions in comparison to mitigation).

our results, the number of co-occurrences is much higher than in cities with fragmented organizational institutionalization. But, for example, Darmstadt and Würzburg have officials who are in charge of both mitigation and adaptation, and the distribution of occurrences of mitigation and adaptation is much higher for mitigation than adaptation resolutions. Consistent with [18,34], this distribution corresponds to the observation that – within the sampled period – adaptation was often seen as a complementary and subordinate add-on to mitigation. A second example comes from Kaiserslautern and Osnabrück that have different officials working in the same department, specifically dedicated to mitigation or adaptation. The extra time and resources dedicated to each issue may improve effectiveness. The distribution of co-occurrences supports this assumption: occurrences of mitigation and adaptation in resolutions are nearly equal.

Our results, thus, highlight the need for further research on this potential association, notably by testing the hypothesis on a larger set of cities.

4.3. Theoretical contributions and policy recommendations

Based on an empirical dataset of 72 German cities, we show that the explicit, joint implementation of mitigation and adaptation in the organizational structure of city administrations is crucial to the implementation of joint measures. Our results indicate that mitigation and adaptation are more likely to co-occur in city council resolutions, in cases where the issues are institutionalized within one department. This observation supports earlier work by Grafakos et al. [23] and Landauer et al. [93] who found that joint institutionalization could lead to more holistic solutions and less “silo-thinking” than when issues were institutionalized in separate departments. Our study helps to identify conditions at local level that more effectively support the integration of related activities [19]. It provides strong support for, and validates the theoretical assumptions of the Adaptation Institutionalization Framework [22] with regard to the clear definition of organizational roles and responsibilities.

Furthermore, our results show that although mitigation and adaptation action plans are important, it is not necessary to combine both issues into one mitigation and adaptation concept. At a minimum, separate plans should be put in place. Given the lack of research regarding the relevance and effectiveness of joint or separate plans in executing joint measures [94], our research provides important new evidence that contributes to filling this gap. Rather than investigating plan-outcome relations, recent research primarily focuses on the (joint) integration of mitigation and adaptation into dedicated climate action plans [23,35,94,95]. It is clear that this is fertile ground for identifying synergetic mitigation and adaptation measures. At the same time, there is currently no lack of practical guidelines for developing joint measures at the municipal level [20]. Consequently, further research is needed to comprehensively analyze the need for joint climate action plans.

Moreover, our study contributes to environmental and climate policy integration and mainstreaming discourses and approaches [51–54] at the municipal level [28,96]. In fact, the insights presented here can help cities to rethink their intraorganizational setting and cooperation mechanisms, and enhance their contribution to the United Nations Sustainable Development Goals 11 and 13 [97,98]. We clearly showed that the concentration of responsibility for climate mitigation and adaptation issues in a joint coordination unit (i.e. department) has mutual benefits for both; it can help to minimize conflicts and mainstream climate issues in other policy areas.

This study addresses the analytical problem of the assessment of policies and their implementation [99]. The methods presented here are a practical way to capture a snapshot of the actual implementation of measures. The resolutions making up our dataset are only a fraction of the full range of potential policy integration efforts found in cities worldwide. Other measures include the integration of mitigation and

adaptation into sectoral goals and strategies (e.g. social development concepts, urban mobility and traffic concepts, building concepts or city development concepts) and standard operating procedures (e.g. urban building plans).

The study also supports the application of the logic of appropriateness to guide administrative decision-making [55,56,100]. The approach stipulates that decision-making should follow standard, rule-based operating procedures. Drawing upon elements of neo-institutional and organization theory [25,27,38–42], municipal administrations act within a framework structured by rules, and follow organizational routines. Our results highlight that clearly-defined organizational rules and roles (i.e. assigning responsibility for both mitigation and adaptation to one department and, hypothetically, to different officials) are a crucial way to support the proposal of new resolutions, which is, itself, a standard operating procedure or organizational routine. Furthermore, our insights contribute to discussions regarding the (a)political role of bureaucracy [46] in the specific organizational context of departments and councils. Depending on the local situation, and the development path taken by the city administration, these departments, or specific officials, can become semi-autonomous centers of power, with their own preferences and goals (e.g., [101]), and their influence can determine political outcomes [27,100]. The extent to which specific departments, and their officials, take independent political actions, or execute decisions taken by the political leadership, would be an interesting topic for further research.

Overall, the insights provided by this study are both a theoretical advance and can provide concrete practical recommendations that may help cities worldwide to initiate and conduct combined mitigation and adaptation actions, thereby contributing to the global objective of limiting climate change and the related United Nations Sustainable Development Goals on climate action. Further research should examine how the results of our study can be best replicated and applied to other jurisdictions. Local politics and administrations have different traditions, and inter-relationships. For example, there are differences in the level of autonomy and the power of departments within the organizational structure. Similarly, there are differences in the role played by advisory agencies that develop widely-used blueprints for municipal organizations [102,103]. Such conditions can impact the desired outcome of joint resolutions [29]. The national setting may also suggest that another outcome variable, such as the mayor's decisions, is more relevant (cf. Section 2.1.1.).

Finally, our results support the realization of synergies, and offer a way to comprehensively advise civil society on how to reduce greenhouse gases and prepare for climate change impacts, as demanded in the Paris Agreement. In this context, our findings clearly suggest that implementing mitigation and adaptation in one, coordinating department is an important step toward enhanced joint climate change mitigation and adaptation measures. Adequate staffing, in the form of officials dedicated to each issue working in the same department, is also needed to effectively support the implementation of mitigation, adaptation, and joint measures.

CRediT authorship contribution statement

Christian Göpfert: Conceptualization, Methodology, Investigation, Formal analysis, Data curation, Writing - original draft, Visualization. **Christine Wamsler:** Conceptualization, Writing - review & editing, Supervision. **Werner Lang:** Conceptualization, Writing - review & editing, Supervision.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

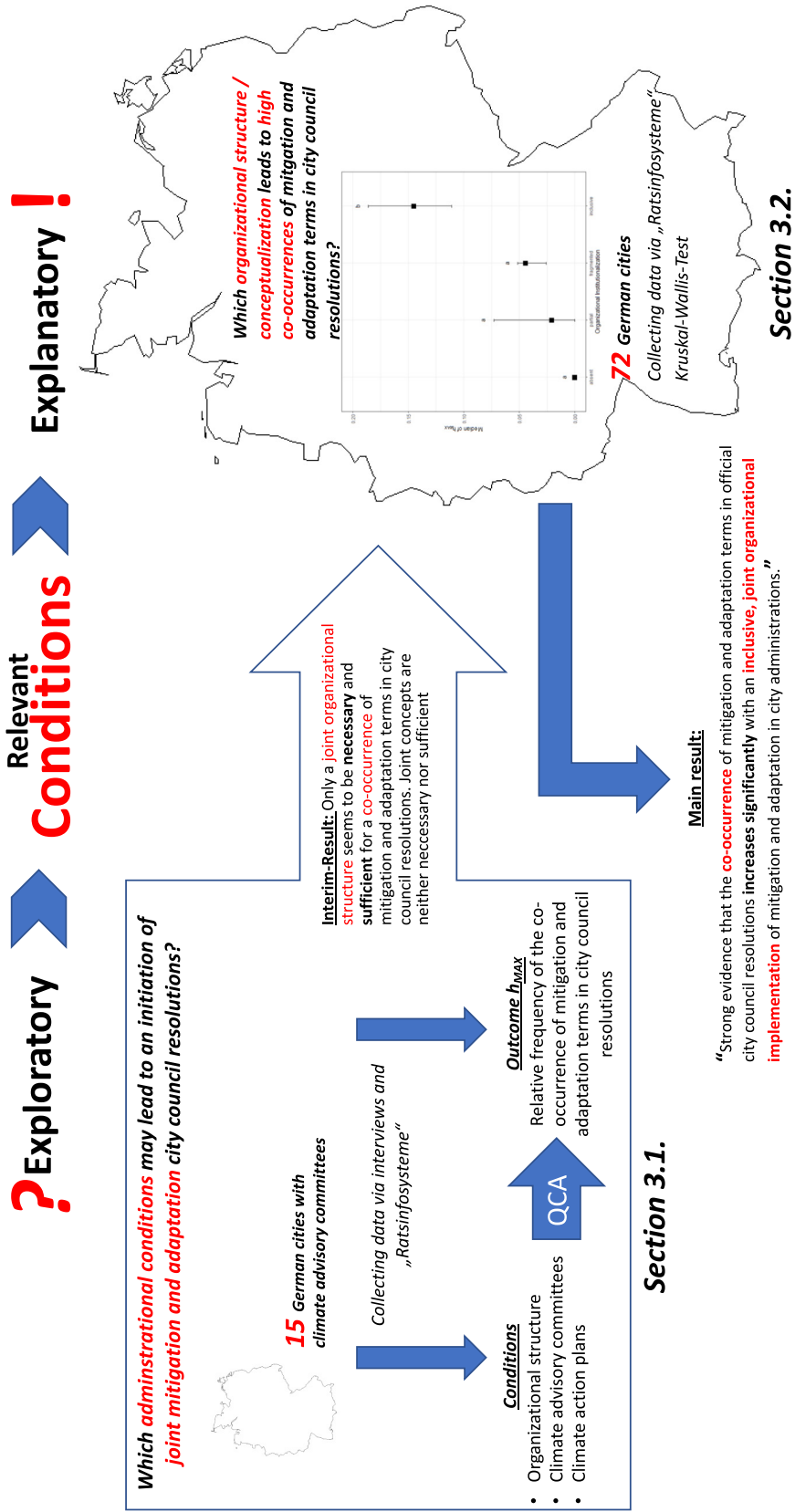


Fig. 6. Different research steps leading to the results (Section 3).

Appendix B. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.cacint.2020.100052>.

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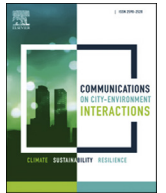
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Appendix A.3: Paper 3

Göpfert, C., Wamsler, C., & Lang, W. (2019). Institutionalizing climate change mitigation and adaptation through city advisory committees: Lessons learned and policy futures. *City and Environment Interactions*, 1, 100004. doi:10.1016/j.cacint.2019.100004

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Research Articles

Institutionalizing climate change mitigation and adaptation through city advisory committees: Lessons learned and policy futures

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ARTICLE INFO

Keywords:

Mainstreaming
Climate change mitigation
Climate change adaptation
Climate policy integration
Germany
Urban planning

ABSTRACT

Municipal advisory committees are becoming increasingly influential in guiding decision-making processes that address climatic issues. According to the Adaptation Institutionalization Framework (included in the recent IPCC report), the implementation of such participatory structures is vital for the effective, joint institutionalization of climate change mitigation and adaptation. However, there is a lack of empirical evidence to support this claim. Against this background, this paper tests the Adaptation Framework using the example of municipal advisory committees in Germany. Based on a review of 107 cities, and social network analyses of 20 cities, we develop a typology of advisory committees, examine their stakeholder constellations, and assess how they influence municipalities' capacity to institutionalize joint mitigation and adaptation goals in sector policy and planning. Our results and the developed social network analysis approach can be used by cities worldwide to systematically analyze and enhance participation structures to address climate change more effectively. We conclude with some recommendations for future research and policy.

1. Introduction

We know that municipalities play a crucial role in integrating climate change mitigation and adaptation goals into sector policy and planning [1–6]. However, for many years, mitigation and adaptation have been dealt with in isolation. This has led to ineffective or unsustainable solutions such as photovoltaic cells on the roofs of new buildings (mitigation) that can inhibit their greening (adaptation). Consequently, efforts to improve synergies in their implementation (termed “adaptation”) are growing among scientific and practitioner communities [7–15].

Despite this increasing interest, related research is scarce. Only a few theoretical or empirical studies have examined the joint institutionalization of mitigation and adaptation in municipalities, resulting in a lack of analytical frameworks and synergy at both strategic and operational levels [16–18]. Theoretical developments, for instance, in the form of the so-called Adaptation Institutionalization Framework [19]; cf [20] are recent and require empirical testing. The Framework highlights organizational features (variables) that play a key role in enhancing joint institutionalization. Examples include formal collaboration structures that often take the form of city advisory councils, boards or commissions. Municipalities face environmental challenges and their success depends, in part, on their ability to interact with relevant actors. These

co-production structures are one way to interact with the environment. They are embedded in the organizational structure of city administrations, and are composed of both internal actors (e.g. political leaders, council officials, departmental representatives) and external actors (representatives of organizations and civil society). Hereinafter we refer to them as ECAs (internal-external collective actors).

Such participatory structures have proven vital in institutionalizing a wide range of issues [1,21–26]. As the goals set by an organization are mainly the result of negotiations and bargains that reflect the preferences of influential members (the *dominant coalition*, see Hula [27]), the attention given to climate issues is significantly influenced by their internal and external members [28]. These stakeholders “make contributions to the organization” [21] in order to enable it to achieve its vision or goals. In this context, their contribution to ECAs directly influences the implementation of mitigation and adaptation measures. In addition, intra- and interorganizational ECA networks may have a positive effect on the institutionalization of climate-related issues through organizational learning, notably by exchanging knowledge and deepening commitment to goals and visions.

Furthermore, the garbage can model of organizational choice [29,30] argues that the success of solutions (such as the political will to include climate mitigation or adaptation measures) is heavily dependent on

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<https://doi.org/10.1016/j.cacint.2019.100004>

Received 24 July 2019; Received in revised form 23 September 2019; Accepted 29 September 2019

Available online 15 October 2019

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actors' (e.g., ECAs as collective actors) access to the choice arena. The more power these ECAs have (in terms of the number and influence of participating actors) the more emphasis is given to mitigation and adaptation issues within the municipal administration and city council.

Mitigation and adaptation research highlights the importance of collaborative governance and implementation of co-production structures, by involving relevant stakeholders in planning and decision-making processes [1,24–26,31], and expanding social networks [32,33]. Against this background, this empirical paper focuses on municipal advisory committees in Germany (known as Beiräte, Kommissionen or Komitees in German), which are a highly formalized and institutionalized ECA subtype [34,35]. With regard to the theoretical background, the research questions addressed in this paper are:

- What types of ECAs are institutionalized in the observed cities (including those with an explicit focus on mitigation and adaptation)?
- Which stakeholders participate in which types of committees, and how does this influence the joint institutionalization of mitigation and adaptation?

We therefore focus on the composition of committees, and the capacities and resources they require to fulfill their interdisciplinary and cross-cutting missions related to mitigation and adaptation. We adopt a mixed methods approach, notably a literature review of 107 German cities, and a detailed social network analysis of 20 German cities (described in Section 3) to empirically test the Adaptation Institutionalization Framework using the example of ECAs.

Section 4 presents the results of our analysis of: (1) the types of ECA (both all ECAs in general, and climate-related ECAs in particular) implemented in the overall dataset of 107 cities (section 4.1); (2) stakeholder constellations and interconnections between ECAs in the subset of 20 cities with CSCs; and (3) how this influences their capacity to jointly institutionalize mitigation and adaptation goals in sector policy and planning (section 4.2). We conclude by highlighting the main lessons learned from our work, and some recommendations for future research and policy.

2. Conceptual framework

The recently-developed Adaptation Institutionalization Framework (AIF) develops the variable “external-internal collective actors” (ECAs). Municipal advisory committees are a subtype of this variable [19]; cf [20]. Drawing upon theories of institutionalization processes, organizational culture, organizational process models and, especially, Leavitt's diamond [21,36–43], together with established concepts related to climate policy integration and mainstreaming [31,44–48], the AIF focuses on the institutional prerequisites that are needed to jointly implement climate change mitigation and adaptation (termed ‘adaptigation’). It develops four key variables to systematically assess and support the joint institutionalization of mitigation and adaptation: the organizational structure; its visions and goals; technology; and actors (especially ECAs). Institutionalization is divided into four categories: absent (neither mitigation nor adaptation is implemented), partial (either mitigation or adaptation is implemented), fragmented (mitigation and adaptation are implemented, but organizationally separated), and inclusive (mitigation and adaptation are jointly implemented).

This study focuses on advisory ECAs, which take the form of institutionalized coalitions or single-issue networks [27,49,50]. They are established either by legal statute, a city council resolution or a directive from the mayor, and are composed of internal and external actors. They can thus be seen as governance instruments that support the active participation of actors, and supplement democratically-elected committees [34]. Less formal coalitions, such as temporary, project-related groups or informal networks such as round tables or working groups (see e.g. Eberhardt [51]) are not the subject of this investigation. Unlike official committees, ECAs cannot pass legally-binding resolutions.

Rather, their role is to advise the administration and citizens, to share knowledge, to occasionally contribute new ideas, and to represent special interests [35].

The AIF claims that the involvement of urban institutions and civil society in developing solutions and supporting decision-making processes is an important way to effectively institutionalize mitigation and adaptation. In most cases, municipal advisory committees are a formal, structured way to involve external actors in public policy.

3. Methodology

This study adopts a mixed methods approach to assess and analyze the influence of committees, based on the AIF (Section 2). The socio-geographical focus is independent German cities (kreisfreie Städte) that are not part of another local government entity. They were identified using the GV-ISys dataset provided by the German Federal Office of Statistics [52], and were chosen because of their extensive, independent legal and financial powers [53].

We began by reviewing the official literature and websites for information about existing committees and conducted interviews with city officials (Section 4.1). Next, qualitative data and social network analyses identified actors that participated in a subset of committees, and patterns of interaction between them (Section 4.2). The following sections describe these two steps in more detail (Sections 3.1 and 3.2). See Fig. A1 for a graphical presentation of the process.

3.1. Empirical data collection

We collected 618 official documents from 594 municipal advisory committees in 107 German cities. These predominantly consisted of statutes and procedural rules. In particular, we searched official websites (known as Ratsinformationssysteme¹), which nearly every city hosts. To complete the picture, for these 107 cities, we gathered data from all of their other official committees accessible via the internet, such as senior citizens' or architectural advisory boards (see Table 1 for a comprehensive overview). Data from the 594 committees were subsequently clustered into several thematic categories (see Table 1). In cities where committees had been explicitly implemented to address issues of climate mitigation and/or adaptation (climate specific committees [CSCs]), we also conducted short interviews and emailed questionnaires² to confirm our understanding of the data. Questions encompassed: (1) how the committee had been implemented (by statute or city council resolution); (2) the thematic integration of adaptation in addition to mitigation; and (3) the role of the committee (advising the council and the administration, or information sharing).

3.2. Data analysis

Focusing on the 20 cities where CSCs have been implemented (see Table A.1), we compared how the actors that participate in CSCs differ from actors who participate in other municipal committees. Here, the aim was to identify so-called “bridging” actors, who could facilitate knowledge sharing and information transfer between CSCs and other committees. Qualitative data coding techniques were applied to official documents; codes were mainly generated inductively, in-vivo. The code structure was permanently optimized by grouping similar actors into broader categories such as “Welfare Organizations” or “Churches”, before combining them into categories such as “Social” or “Religion” (see Tables 2 and 3). The result of this thorough and detailed process was a

¹ Ratsinformationssysteme are online platforms that host the agendas and resolutions of city councils and their committees.

² Sixteen questionnaires were emailed to city officials (response rate: 75%), and seven individual interviews were conducted, leading to the identification of a final set of 20 cities with CSCs (Table A.1 and Fig. A1).

Table 1

Overview and classification of municipal advisory committees in the reviewed 107 German cities, including an assessment of their potential to integrate mitigation and adaptation.

| Category | ECA type | (Potential and example) issues of ... | | Analyzed Committees |
|---------------------------------------|--|---|---|---------------------|
| | | Mitigation | Adaptation | |
| CSC | Mitigation Committee | Mitigation | | 11 |
| | Adaptation Committee | Mitigation and adaptation | | 10 |
| <i>Environment and Sustainability</i> | Nature Conservation Advisory Board Allotment Committee Agenda21 Committee Hunting Committee Animal Protection Committee Environmental Protection Committee Development Cooperation Committee One-World Committee Sustainability Committee | These committees predominantly deal with issues regarding sustainability and environmental protection. Concerning mitigation, they include, for instance, sustainable and CO ₂ -reduced nutrition, promoting green infrastructure on buildings to reduce energy consumption, and/or working in international partnerships to enhance renewable energies in the Global South (e.g. municipal climate partnerships). | These committees are, for instance, concerned with issues of biological diversity, soil management, forestry and forest management, water management, sustainable tourism (within international partnerships), and human health. | 81 |
| <i>Urban Planning</i> | Architectural Advisory Board Environment, Mobility and Planning Committee Healthy Cities Committee Housing Committee Monument Preservation Committee Street Naming Committee Urban Development Committee | These committees are concerned with issues regarding CO ₂ reduction predominantly in the fields of energy supply and consumption, climate-friendly mobility (reducing motorized urban transport, modal shift to public and non-motorized transport) as well as raising awareness with regard to energy-saving measures in households. | These committees are concerned with the promotion of the integration of climate adaptation into urban planning (e.g. by promoting green infrastructure, reducing soil sealing, creating and maintaining fresh air passages and open water areas). | 65 |
| <i>Mobility</i> | Cycling Committee Cycling and Pedestrian Committee Passengers' Committee Urban Mobility Committee Motor Vehicle Committee Parking Committee | All of these committees are concerned with mobility issues. Regarding CO ₂ reduction, this could be reducing individual motorized transport and a modal shift to pedestrian and/or cycle traffic and public transport. | Within these committees, adaptation issues regarding transport and the transport infrastructure could be discussed (e.g. streets as potential fresh air passages conflicting with air pollution caused by motorized traffic) | 18 |
| <i>Participation</i> | Migration Advisory Council Senior Citizens' Advisory Council Advisory Council for People with Disabilities Youth Council Civic Participation Committee | These committees are predominantly composed of individual actors that are directly affected by the committee's focus, such as seniors, youths, people with disabilities or migrants. Issues relevant to mitigation are, for instance, the urban mobility needs of different groups (e.g. youth tickets for public transport, accessible tramways and stops). Regarding adaptation, the vulnerability of the respective groups to extreme weather events merits consideration [54]. Furthermore, participating individual actors can raise awareness of climatic issues (e.g. promoting energy savings at household level, or at educational grass root level) in the respective peer groups (e.g. raising migrants' awareness of country-specific climate-relevant provisions). These committees, which are found in almost every city, can be used to spread knowledge and incorporate mitigation and adaptation into different policy fields. | | 287 |
| <i>Social Issues</i> | Social Security Committee Psychosocial Committee Committee for Family Issues Committee for Women's Issues Self-Help Committee Committee for Child Issues Committee for Child Poverty Committee for Gay Men and Women Committee for Girl's Work Committee for International Issues Committee for Refugee Issues | In contrast to the committees in the Participation category, these committees are predominantly composed of institutional actors representing organized interests of affected people (who are usually not members). These committees also address issues concerning mitigation and adaptation, such as mobility, civil protection, spatial planning, or international climate partnerships [55]. | | 29 |

(continued on next page)

Table 1 (continued)

| Category | ECA type | (Potential and example) issues of ... | | Analyzed Committees |
|----------------------------|-----------------------------------|---|---|---------------------|
| | | Mitigation | Adaptation | |
| Public Order | Sociocultural Committee | Potential topics include mitigation-relevant issues such as an autonomous, sustainable energy supply (to reduce the vulnerability of the national grid), energy efficiency (e.g. cooling the mortuary), or mobility that promotes health, such as cycling. | These committees are, for instance, concerned with issues of human health, climate risk reduction and civil protection. | 20 |
| | Youth Center Committee | | | |
| | Security and Prevention Committee | | | |
| | Health Committee | | | |
| | Civil Protection Committee | | | |
| | Flood Protection Committee | | | |
| Education, Culture, Sports | Funeral System Committee | Various aspects of mitigation and adaptation are relevant. Examples include: environmental education from grass roots to academic level, notably regarding non-motorized transport and sustainable energy consumption; engagement with artistic and historical aspects of climate change and how they have affected the city's structure and its inhabitants in the past (e.g. the history of extreme weather events and the sociocultural effects). | | 52 |
| | Sports Committee | | | |
| | Arts Committee | | | |
| | Culture Committee | | | |
| | Educational Committee | | | |
| | School Committee | | | |
| | Academic Committee | | | |
| | Municipal History Committee | | | |
| Economy | Community College Committee | Since the economic sector is significantly affected by mitigation and adaptation issues, various adaptation issues are relevant to these committees. Examples include: sustainable urban logistics, roof and façade greening in combination with energy efficiency in enterprises, guided city tours with a focus on green infrastructure; energy-efficient planning and building of city centers; renewable energy supply for market booths; sustainable funfairs. | | 21 |
| | Economy Committee | | | |
| | Marketplace Committee | | | |
| | City Center Committee | | | |
| | Industry Committee | | | |
| | Tourism Committee | | | |
| | Energy Committee | | | |
| | City Marketing Committee | | | |
| Funfair Committee | | | | |

total of 1,292 actors, who were members of 134 committees.

In the next step, we extracted a code-relation matrix, with committees making up the rows and actors the columns. By linking coded actors to source documents (labeled with the name of the committee), we established a clear connection between committees and participating actors. This data was then subject to various social network analyses [56,57]. The use of network analytics in climate-related administrative science – unlike sociology, anthropology, ethnology, political science [58,59], or even economics [60] – remains scarce, despite its potential [32,50,61]. The Python NetworkX library [62,63] was applied to analyze the structure, composition and characteristics of networks.

Based on the collected data, we created several bipartite (two-mode) network graphs. These graphs represent connections (edges), between two types of nodes: Actors and ECAs. Each edge represents the membership of an actor in the respective committee. Categorical network graphs were developed to represent connections between ECA categories (for example, CSCs and other types of committee) and actor categories (for example, “Mobility” or “Public Order”), together with very detailed network graphs representing connections between specific ECAs and specific actors.

We also projected analogue unipartite network graphs (one-mode networks with ties only between actors or only committees) from bipartite graphs in order to analyze actors that were members of the same ECAs, and vice versa [61]. The Gephi software package [64] was used to illustrate our results.

4. Results

This section presents the results of the empirical analysis. It begins with a comprehensive systematization of municipal climate-related committees, and their potential to support the institutionalization of

mitigation and adaptation (Section 4.1). Second, we present internal and external actor constellations in relation to the different committees, and how this influences their power to act (Section 4.2).

4.1. Advisory committees: types and potential to integrate mitigation and adaptation

Overall, two types of climate-related advisory committees were identified in the 107 cities:

- *Climate specific committees (CSC)*. These committees are explicitly implemented to address issues of mitigation, or mitigation and adaptation.
- *Climate integrative committees (CIC)*. These non-climate-specific committees can, theoretically, be tasked with addressing issues of mitigation and/or adaptation, along with associated mainstreaming. They include mobility committees or architectural advisory boards. In cases where climate mitigation and/or adaptation was included in their portfolio, it was not their principal task (in contrast to CSCs). For analytic purposes, we subdivided them into eight categories: Environment and Sustainability; Urban Planning; Mobility; Participation; Social Issues; Public Order; Education, Culture, Sports; and Economy (see Table 1).

The analysis established that there were 21 CSCs, and 573 CICs, divided into over 60 types of CIC (see Table 1). Regarding their potential to support the institutionalization of mitigation and adaptation, the following patterns were identified:

- Not one CSC has been established solely to address adaptation.

Table 2
Roles of internal actors who participate in CSCs and CICs of the observed 20 cities.

| ECA type | Number of ECAs (out of 20 cities) | Internal organizational units (i.e. departments) participating in this type of ECA. Numbers in brackets indicate how often officials working in this department are members of the observed ECA | ECA category |
|---|-----------------------------------|--|--------------------------------|
| Mitigation Committee | 11 | <i>Environment and climate</i> (10), real estate(4), structural and civil engineering (3), city planning (3), climate managers and officers (3), waste management (2), Mayor (2), public order (2), city development (2), traffic (2), culture (2), greening (2), economic development (1), city marketing (1), social integration and inclusion (1) | CSC |
| Adaptigation Committee | 10 | <i>Environment and climate</i> (11), structural and civil engineering (5), waste management (3), climate managers and officers (3), Mayor (2), real estate (2), economic development (2), traffic (1), city planning (1), Agenda-21-officer (1), IT (1), finance (1), housing (1) | CSC |
| Migration Committee | 19 | <i>Mayor</i> (5), <i>Social integration and inclusion</i> (3) | Participation |
| Senior Citizens' Advisory Committee | 16 | <i>Social integration and inclusion</i> (8), Mayor (4), culture (1) | Participation |
| Advisory Council for People with Disabilities | 11 | <i>Social integration and inclusion</i> (9), Mayor (1), economic development (1) | Participation |
| Architectural Advisory Board | 11 | <i>Mayor</i> (5), structural and civil engineering (2), city planning (2), culture (1) | Urban Planning |
| Nature Conservation Advisory Board | 8 | <i>Lower nature protection authority</i> (3), environment and climate (1) | Environment and Sustainability |
| Youth Committee | 6 | <i>Youth department</i> (3) | Participation |
| Security and Prevention Committee | 4 | <i>Social integration and inclusion</i> (3), public order (2), gender equality officer (1) | Public Order |
| Social Security Committee | 4 | <i>Social integration and inclusion</i> (4), Mayor (3) | Social Issues |
| Arts Committee | 3 | <i>Culture</i> (3), Mayor (2), structural and civil engineering (1) | Education, Culture, Sports |
| Sports Committee | 3 | <i>Mayor</i> (3), sports (2), others (1) | Education, Culture, Sports |
| Educational Committee | 3 | <i>Youth department</i> (1) | Education, Culture, Sports |
| Agenda21-Committee | 3 | <i>Agenda21-officer</i> (2), <i>Mayor</i> (2), <i>social integration and inclusion</i> (2), participation (1), youth department (1), city development (1), finance (1), city planning (1), environment and climate (1), economic development (1) | Environment and Sustainability |
| Civic Participation Committee | 3 | <i>Participation</i> (2), city planning (1), Mayor (1), others (1) | Participation |
| Psychosocial Committee | 3 | <i>Social integration and inclusion</i> (5), Mayor (2), health office (1) | Social Issues |
| Economy Committee | 2 | <i>Economic development</i> (1), <i>Mayor</i> (1) | Economy |
| Industry Committee | 2 | <i>Economic development</i> (2), city planning (1), structural and civil engineering (1) | Economy |
| Cycling Committee | 2 | <i>Structural and civil engineering</i> (3), environment and climate (2), social integration and inclusion (1), PR office (1), public order (1), city planning (1), economic development (1), greening (1), city development (1), Mayor (1), bike officer (1), finance (1), traffic (1) | Mobility |
| Street Naming Committee | 2 | <i>Culture</i> (1), <i>city archive</i> (1), <i>structural and civil engineering</i> (1) | Urban Planning |
| Municipal History Committee | 1 | <i>Mayor</i> (1), <i>culture</i> (1), <i>city archive</i> (1) | Education, Culture, Sports |
| Culture Committee | 1 | <i>Culture</i> (2), Mayor (1) | Education, Culture, Sports |
| Allotment Committee | 1 | <i>Greening</i> (1), <i>city planning</i> (1), <i>Mayor</i> (1), <i>real estate</i> (1), <i>environment and climate</i> (1) | Environment and Sustainability |
| Parking Committee | 1 | <i>Traffic</i> (1), <i>public order</i> (1) | Mobility |
| Urban Mobility Committee | 1 | <i>Traffic</i> (1) | Mobility |
| Civil Protection Committee | 1 | <i>Fire department</i> (1) | Public Order |
| Health Committee | 1 | <i>Mayor</i> (1) | Public Order |
| Funeral System Committee | 1 | <i>Mayor</i> (1) | Public Order |

- Of the 21 CSCs, we identified 11 mitigation and 10 adaptigation committees (for more information, see Table A.1). Five of the adaptigation committees focused on mitigation, while adaptation was marginal.
- With respect to the different types of CIC, in principle, mitigation and adaptation could be integrated or mainstreamed into every thematic category. The "(Potential) issues" column in Table 1 indicates possible factors related to mainstreaming mitigation and adaptation. Regarding mitigation, this refers to: climate-friendly energy supply and consumption; the reduction of motorized urban transport and a shift to pedestrian/cycle traffic or public transport; solid waste and wastewater management; sustainability; and nutrition [1,3,65,66]. Regarding adaptation, it includes: human health; construction; water management; coastal and marine protection; soil; biological diversity; agriculture; forestry and forest management; fishery; energy conversion; transport and supply; financial services; transport and transport infrastructure; trade and industry; tourism; and cross-cutting topics such as spatial, regional and physical development, planning and civil protection [31,67,68].

Remarkably, the city of Hannover maintains two CSCs (Table A.1), which differ in size, actor composition and purpose:

- A large committee (Kuratorium), consists of representatives of over 50 thematically-heterogeneous organizations and institutions. The primary function is networking with a focus on knowledge transfer.
- A small, 8-member committee (Klimawaisen-Rat) advises the administration and council. In contrast to the large committee, its members are not organizational representatives, but act in their personal capacity as experts who provide independent advice.

Similarly, Münster has implemented a mitigation committee with a clear focus on providing advice. This, too, is exclusively composed of independent, external experts (see <https://www.klimabeirat-muenster.de/>).

4.2. Actor constellations in cities with CSCs: dominant players and homophily

A detailed social network analysis of the 20 cities with CSCs revealed

Table 3
Role of external actors who participate in CSCs and CICs of the observed 20 cities.

| ECA type | Number of ECAs (out of 20 cities) | Categories of external actors participating in this type of ECA. Numbers in brackets indicate how often actors of the specific category are members of the observed ECA | ECA category |
|---|-----------------------------------|---|--------------------------------|
| Mitigation Committee | 11 | <i>Economy (46)</i> , education and research (29), energy (28), mobility (16), environment (13), housing (9), urban planning (8), sustainability (8), culture (7), civil (3), health (2), public order (2), sports (2), climate (2), ECAs (2), social (1) | CSC |
| Adaptigation Committee | 10 | <i>Economy (25)</i> , energy (20), education and research (14), housing (11), mobility (11), environment (8), climate (5), public order (5), civil (4), sustainability (3), urban planning (3), culture (3), social (1), sports (1), health (2) | CSC |
| Migration Committee | 19 | <i>Social (28)</i> , economy (5), civil (4), education and research (3), culture (2) | Participation |
| Senior Citizens' Advisory Committee | 16 | <i>Social (62)</i> , culture (10), economy (6), education and research (6), sports (3), health (3), political parties (3), ECAs (3), civil (1) | Participation |
| Advisory Council for People with Disabilities | 11 | <i>Social (27)</i> , ECAs (7), civil (1) | Participation |
| Architectural Advisory Board | 11 | <i>urban planning (29)</i> , culture (2), housing (1) | Urban Planning |
| Nature Conservation Advisory Board | 8 | <i>Environment (48)</i> , economy (12), sports (3), leisure (2), education and research (1), civil (1), public order (1) | Environment and Sustainability |
| Youth Committee | 6 | <i>Social (14)</i> , education and research (5), economy (2) | Participation |
| Security and Prevention Committee | 4 | <i>Public Order (8)</i> , education and research (6), social (4), civil (2), sports (1), economy (1), ECAs (1) | Public Order |
| Social Security Committee | 4 | <i>Social (23)</i> , culture (5), economy (2), civil (2), ECAs (1) | Social Issues |
| Arts Committee | 3 | <i>Culture (6)</i> | Education, Culture, Sports |
| Sports Committee | 3 | <i>Sports (9)</i> , education and research (2), civil (1) | Education, Culture, Sports |
| Educational Committee | 3 | <i>Education and research (11)</i> , economy (6), social (5), public order (4), civil (1), ECAs (1) | Education, Culture, Sports |
| Agenda21-Committee | 3 | <i>Economy (9)</i> , social (6), environment (3), culture (2), civil (2), education and research (1), sustainability (1) | Environment and Sustainability |
| Civic Participation Committee | 3 | <i>Civil (5)</i> , culture (1), sports (1) | Participation |
| Psychosocial Committee | 3 | <i>Social (20)</i> , health (12) | Social Issues |
| Economy Committee | 2 | <i>Economy (3)</i> , education and research (2) | Economy |
| Industry Committee | 2 | <i>Economy (13)</i> , education and research (2), public order (1) | Economy |
| Commuters' Committee | 2 | <i>Mobility (7)</i> , ECAs (4), education and research (3), economy (2), social (1) | Mobility |
| Cycling Committee | 2 | <i>Mobility (11)</i> , economy (2), public order (2), education and research (1), civil (1), ECAs (1), environment (1) | Mobility |
| Monument Preservation Committee | 2 | <i>Urban planning (3)</i> , culture (2), housing (2), public order (1), economy (1) | Urban Planning |
| Street Naming Committee | 2 | <i>Culture (4)</i> , education and research (2), economy (1), civil (1) | Urban Planning |
| Culture Committee | 1 | <i>Culture (5)</i> , urban planning (1) | Education, Culture, Sports |
| Municipal History Committee | 1 | <i>Culture (4)</i> , urban planning (1), education and research (1) | Education, Culture, Sports |
| Allotment Committee | 1 | <i>Environment (2)</i> , economy (1), public order (1), | Environment and Sustainability |
| Development Cooperation Committee | 1 | <i>Sustainability (1)</i> , <i>environment (1)</i> , <i>education and research (1)</i> , ECAs (1) | Environment and Sustainability |
| Parking Committee | 1 | <i>Economy (4)</i> , housing (2), ECAs (1) | Mobility |
| Urban Mobility Committee | 1 | <i>Mobility (2)</i> , sustainability (1), public order (1), social (1) | Mobility |
| Civil Protection Committee | 1 | <i>Social (6)</i> | Public Order |
| Health Committee | 1 | <i>Health (6)</i> , social (5), economy (2), mobility (1), civil (1), ECAs (1) | Public Order |
| Funeral System Committee | 1 | <i>Culture (3)</i> | Public Order |

a broad spectrum of internal and external actors who participate in their 113 CIC and 21 CSC committees (Tables 2 and 3, Table A.1). The following key patterns were identified:

- CICs have homophilous and disciplinary actor structures. Members have a similar thematic background, which is similar to the committee's key theme.
- There are only a few actor connections between thematic committees (shared memberships).
- The actor structure of CSCs is, however, principally interdisciplinary. Overall, taking all CSCs into account, every category of actor is represented. As Table 2 shows, CSCs also have the most diverse structure in terms of the number of participating actors.
- Despite the connectedness of CSCs to all identified actor categories, there are some gaps regarding potentially relevant actors.
- There are clear, strong ties between CSCs and the economic sector.

The analysis found that *internal actors* (members and

representatives of the city administration) participating in the same committee are relatively similar to each other (Table 2). Drawing on coalition theory, homophily may explain the formation of ties between actors within a coalition [59], i.e. "the idea that individuals who are similar to one another are more likely to form ties" [61]. Nearly every committee is predominantly composed of officials from specific thematic departments (for example, culture committees are composed of internal actors from departments responsible for cultural issues). Notably, mitigation and adaptigation committees are also shaped by homophily, as they are mainly composed of officials from environment, climate, and structural and civil engineering departments, although with a broader composition in terms of organizational units.

Table 2 highlights the position of officials who predominate in the respective committees (shown in italics). The consequence of this homophilous, isolated structure is that different organizational units rarely sit together. On average, an internal actor is a member of 3.1 committees; this can be compared to the mayor, who participates in at

least 19 of the 28 types of committee. This makes the diffusion of knowledge between organizational units difficult.

Compared to the composition of internal actors, homophily is far more apparent in the composition of *external actors* (representatives of organizations and civil society). For instance, arts and culture committees are predominantly made up of cultural actors, while members of the commuters' committee and the cycling committee are characterized by protagonists in the mobility field. Economic actors dominate the parking committee, rather than mobility-related actors, because the focus is on parking taxes rather than traffic policy. For analytic purposes, external actors were condensed into 17 thematic categories (Table 3), where focal actors are highlighted in italics.

These actor constellations translate into the following patterns:

- *CSCs act as interfaces*: Exceptions to the otherwise homophilous composition are mitigation and adaptation committees, which bring together actors from different disciplines. Here, all identified sectors are represented (Fig. 1).
- *Relevant, missing actors*: Some actors, who participate in CICs, and who could contribute to mitigation and adaptation are missing from CSCs. Regarding internal actors these include, among others, the bike officer (mitigation), or the fire and health department (adaptation). Concerning external actors, we can distinguish between individual and institutional actors: missing individual actors include, for instance: independent architects; conservationists and city planners (urban planning); cyclists and commuters (mobility sector); medical experts (health sector); or real estate proprietors (housing).

Potentially relevant, but missing institutional actors are, for instance: health authorities (health sector); the police (public order); mobility-related actors such as bike carriers, the German Road Safety Organization, or "Pro Bahn" (an organization representing rail commuters); along with associations for people with disabilities, seniors and migrants, who play an important role in participatory structures (Table 1).

- *Dominant actors in CSCs*: The analysis revealed which actors participate in most mitigation and adaptation committees. In mitigation committees, actors in the economic sector (notably the Chamber of Industry and Commerce, and the Chamber of Crafts) hold most seats, followed by education and research sectors, and the energy sector (reflected in the thickness of the edges in Fig. 1). A similar distribution is seen in adaptation committees.

5. Discussion and conclusions

Our empirical analysis of municipal advisory committees has practical implications for municipal decision-makers in German cities and worldwide, and helps to identify areas for further research. It provides robust arguments and data that can guide the joint institutionalization of mitigation and adaptation in participatory municipal structures. The following sections discuss the practical implications of our work, and offer some policy recommendations. These relate to: (1) the mainstreaming of mitigation and adaptation considerations into advisory committees (Section 5.1); (2) inter-organizational learning, advice, knowledge co-development and transfer

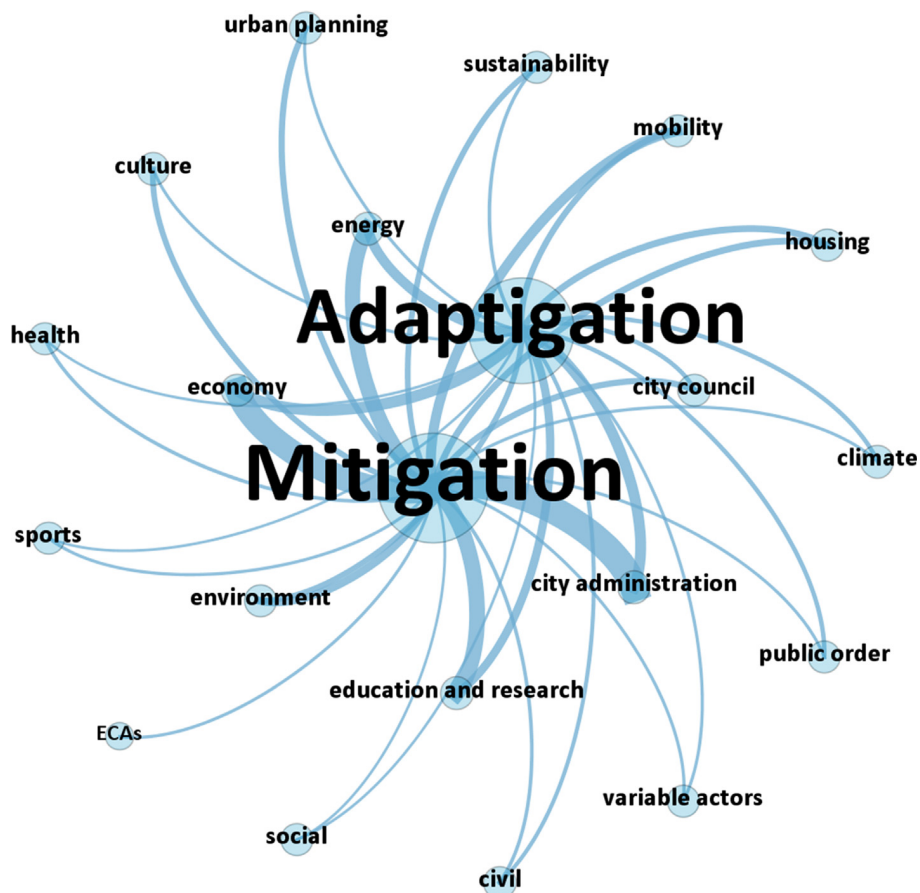


Fig. 1. Bipartite network graph showing the types of actors who are members of CSCs. The thickness of the edges (connecting lines) indicates how often these types of actors are observed in the 21 CSCs (11 mitigation and 10 adaptation committees).

(Section 5.2); and (3) the composition of advisory committees (Section 5.3).

5.1. Mainstreaming mitigation and adaptation

Typically, mitigation and adaptation are mainstreamed as autonomous policy fields (along with the integration of other sectoral policies), and/or by integrating them into existing sectoral policies [45,47,69,70]. Drawing on insights from environmental and climate policy integration, a key aim of jointly institutionalizing mitigation and adaptation is to reduce conflicts, ambiguity and inconsistencies in how a city handles climate-related issues in combination with other policy sectors and contents [28,39]. In the case of climate change adaptation, recent studies have addressed the question of how to effectively integrate this policy field into the existing, core work of city administrations [6,19,48,71]. Climatic issues can be included in daily practice by consistent actions and content, and coherence with existing sectoral policies, i.e. “[the aim is] to introduce processes and means that reduce coherence problems between sectoral and climate policies” [46].

Consistent with the literature, our results show that climatic issues can be institutionalized in municipal participation structures through CSCs, and by integrating mitigation and adaptation into CICs. The challenge is to create and maintain committees that are able to support the implementation and institutionalization of climate change mitigation and adaptation (i.e. adaptation). In this regard, our analyses reveal two interesting insights:

- *There are no adaptation committees.* The analysis found that none of the 107 German cities had established a committee solely focused on climate change adaptation (Section 4.1). CSCs either only focused on mitigation, or mitigation enhanced with adaptation (adaptation). This is consistent with earlier analyses of planning instruments which found that no city in Germany has implemented an adaptation plan but not a mitigation plan [71,72]. If we look at pathways for the institutionalization of climate issues in German municipalities, we see that almost every city began with targeting a reduction in CO₂ emissions [19,71]. Adaptation took the form of follow-up actions, or an add-on to existing mitigation actions. Our analysis paints the same picture.
- *Climatic issues can be incorporated into all types of committees.* Our analysis shows that all identified committees are, in principle, capable of integrating climatic issues; thus, they are CICs (Section 4.1 and Table 1). Furthermore, CSCs are connected to every category of actor (Fig. 1), which suggest that, in theory, representatives from every thematic sector are affected by mitigation and/or adaptation issues.

These results suggest that CSCs, in particular, could be a vital starting point for institutionalizing climatic issues (in participatory structures in general) and mainstreaming these issues into other advisory committees (in particular). Our analysis also highlights that most cities operate many types of committees, most of them with participation from members of the city council. Furthermore, it reveals that various, relevant individual and institutional actors are missing from CSCs (Section 4.2). However, adding all of these actors to a single CSC could limit its ability to function, in particular when it acts in an advisory capacity. Hence, care is needed to avoid the creation of time-consuming, large committees in favor of smaller, specialized committees, which might be more effective. This is particularly the case with respect to issues that could be integrated into, and institutionalized in, existing committees that promote network learning [73].

It could therefore be rewarding to integrate climatic issues also into already existing committees. This could save personnel and financial

resources, and create synergies between the diverse questions that municipalities have to face, and the issues of mitigation and adaptation. Our results highlight the predominantly homophilous structure of CICs (Table 3), which are characterized by strong ties, frequent interactions and thematic closeness between actors. In this case, the actors needed to mainstream climatic issues may only have weak ties to the committee's core actors. However, as [27,59]; and [50] argue, weak ties can be very strong due to their ability to build bridges with new ideas and knowledge. New actors, who are not in the core group, could initiate innovation and prove to bring a strategic advantage.

CSCs seem to effectively support the joint institutionalization of climate change mitigation and adaptation through increasing capacity development. Furthermore, complementary engagement facilitates the coordination of the mainstreaming process into CICs, thus contributing to policy coherence and consistency. Based on these findings, a two-step strategy to mainstream climatic issues into municipal advisory committees seems to be the most effective:

- Step 1: Launch and maintain the institutionalization process by implementing an adaptation (CSC) committee with a focus on knowledge sharing. This committee should be staffed by “bridging” actors who participate in one or more other advisory committees, thus acting as potential multipliers (see section 5.3)
- Step 2: Network learning by integrating climatic issues into other sectoral, non-climate-specific committees (CICs) through bridging actors.

5.2. Providing advice, and inter-organizational learning

Our results indicate that municipal advisory committees could enhance the institutionalization and mainstreaming of climatic issues through providing policy advice, network learning (cf [73]) and inter-organizational learning. Participants exchange and spread knowledge, and develop a deeper commitment to goals and visions [61]. According to the garbage can model of organizational choice [29,30], the success of solutions (like support for a specific climate mitigation or adaptation measure), or the proliferation of knowledge, relies heavily on participants having access to relevant committees. Through their participation, individual and collective actors can directly influence the implementation of mitigation and adaptation visions and measures; conversely, the information and knowledge gained could influence the behavior and preferences of actors [74]. This could, in turn, lead to the implementation of mitigation and adaptation measures in their own domain. Going further, highly-engaged actors serve as multipliers, spreading information into other inter-organizational networks, especially within climate-related but non-homophilous networks. One example is the “Bayerische Klima-Allianz”, which connects thematically-different actors such as youth, sports, architectural and environmental organizations on a regional scale [75].

Considering these two basic functions (providing advice and inter-organizational learning), our results – especially from Hannover and Münster – suggest a hypothetical distinction between individual committees (e.g. architectural advisory boards) and institutional committees (e.g. urban traffic committees):

- *Individual committees:* In this case, external members are independent experts, who can be people affected by the subject, such as advisory councils for people with disabilities (see also [34]). Although organizations can designate or recommend individuals to join the committee, they are typically not employees of the organization and they are not automatically bound to adhere to instructions. Although these

committees are not very suitable for inter-organizational networking, they can have an effective advisory function.

- **Institutional committees:** Here, external members are representatives of organizations, who are typically subject to directives. These committees are often too big and find it difficult to take decisions. Their inconsistent composition (multiple actors holding different positions with multiple, possibly conflicting preferences, interests, stakes and goals) means that decisions are rarely made without a time-consuming power struggle. These committees are better suited to functioning as networks for knowledge transfer than as advisory boards.

The distinction between these two types may help in composing a committee that is optimized for its intended purpose.

5.3. Composition: practical implications and policy recommendations

Our empirical results are fertile ground for the consideration of how to mainstream climate-related issues into existing CICs. They show, for instance, that it is possible to analyze every city with respect to the composition of its committees in order to draw up recommendations regarding how to compose an adaptation committee, which is itself a starting point for institutionalizing climatic issues in participatory structures.

An illustrative example comes from Würzburg, where internal and external members of the adaptation committee hardly ever participate in other CICs (Fig. A2). The social network analysis showed that there are only a few bridging actors who could be considered as members of the CSC. With the exception of a few internal actors, such as the city council or the Lord Mayor, only five external actors participated in more than one committee, namely: the University of Würzburg, voluntary welfare organizations (three committees each), Friends of the Earth Germany, the Chamber of Crafts, and the Chamber of Industry and Commerce (two committees each). As the city only has 12 ECAs, with a total of 76 participants, there were very few interconnections that can serve as mainstreaming paths between committees. Consequently, we used a social network analysis to identify two options to create connections between CSCs and CICs:

- designate specific members of the CSC as bridging members to CICs; or
- designate an undefined representative of the CSC as a member of CICs.

In either case, modifications would be required to the statutes of CICs. For cities that do not already have CSCs, a network analysis can identify key actors (i.e. actors who participate in the greatest number of committees). These actors could be the foundation for the implementation of

a CSC.

Hence, a major challenge is to identify appropriate committee members. Concerning internal actors, city administrations are made up of multiple administrative units. Although these highly formalized, rule-based, top-down structures tend to be authoritarian, the influence of departments and bottom-up processes must not be underestimated – especially when they are part of a “dominant coalition” (see Scott and Thoenig [21,43]). Thus, consideration should be given to the power of relevant departments to inject their desired goals into the organization's objectives and, especially, committees' strategies. External actors respond, for instance, to rewards, or join committees that correspond to their identity, preferences and standards [38].

Groups, in general, participate in committees: (1) if the parochial interests of the group can be subsumed into the goals of the committee; (2) if the group can gain a symbolic benefit (members are able to highlight issues that are important to them, and can claim credit if something goes well); or (3) to access relevant information [27]. The city administration determines the scope of political and thematic priorities, and committees can be used as an instrument to facilitate and strengthen relationships with specific actors. As the city council and its administration are often the instigators of new committees, they are able to control the rules of the game [38], notably, the number and type of committee, and – in particular – their composition with respect to internal and external actors [26].

Furthermore, our methodology can be used to identify relevant CSC members who are already participating in CICs. Depending on the intended or actual purpose of the CSC (providing policy advice or networking), analyses can provide connection points to bridging actors who should be considered for membership.

In conclusion, our empirical results provide new knowledge on the role of municipal advisory committees for institutionalizing joint mitigation and adaptation goals in sector policy and planning. In addition, they illustrate how cities worldwide can use the AIF, in combination with a social network analysis, to examine and identify the most appropriate constellation of internal and external actors to effectively address climate change. This also relates to citizen involvement. Although the importance of citizen involvement is widely recognized, it is still lacking, notably in urban adaptation planning [76,77]. Mainstreaming climate mitigation and adaptation into advisory committees could assist in systematically addressing such issues. However, further research is needed regarding the political, organizational, and other contextual prerequisites that can influence the implementation of CSCs.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix

Table A1

Climate-specific committees (CSC) in Germany. Cities are categorized by size: medium-sized (<100,000 inhabitants), intermediate (<500,000 inhabitants), and megacities (minimum 500,000 inhabitants).

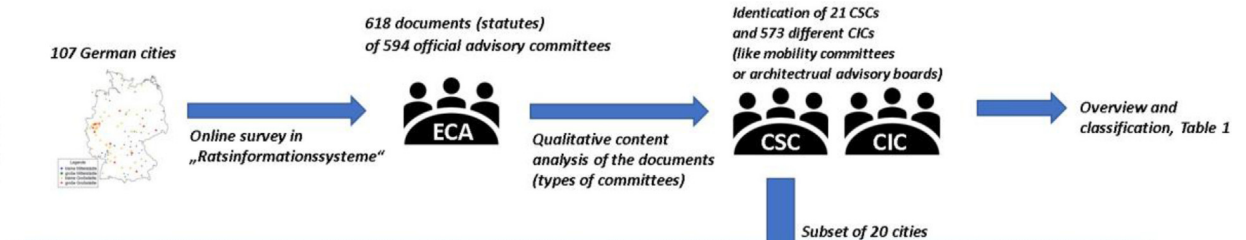
| City | Name | CSC type | City size | State |
|-------------------|--|--------------|--------------|------------------------|
| Aschaffenburg | Energie- und Klimaschutzkommission (energy and climate mitigation commission) | Mitigation | medium-sized | Bavaria |
| Bonn | Klimaschutzbeirat (climate mitigation committee) | Adaptigation | intermediate | North-Rhine Westphalia |
| Darmstadt | Klimaschutzbeirat (climate mitigation committee) | Mitigation | intermediate | Hesse |
| Dortmund | Konsultationskreis Energieeffizienz und Klimaschutz (consultation circle for energy efficiency and climate mitigation) | Adaptigation | megacity | North-Rhine Westphalia |
| Frankfurt am Main | Klimaschutzbeirat (climate mitigation committee) | Mitigation | megacity | Hesse |
| Frankfurt (Oder) | Klimaschutzbeirat (climate mitigation committee) | Adaptigation | medium-sized | Brandenburg |

(continued on next column)

Table A1 (continued)

| City | Name | CSC type | City size | State |
|----------------|--|--------------|--------------|------------------------|
| Göttingen | Klimaschutzbeirat (climate mitigation committee) | Adaptigation | intermediate | Lower Saxony |
| Hannover | Kuratorium Klimaschutzregion Hannover (board of trustees of the climate mitigation region of Hannover) | Adaptigation | megacity | Lower Saxony |
| Hannover | Klimawaisenrat (climatic committee of wise men and women) | Adaptigation | megacity | Lower Saxony |
| Heidelberg | Heidelberg-Kreis Klima und Energie | Mitigation | intermediate | Baden-Wuerttemberg |
| Kaiserslautern | Masterplanbeirat Klimaschutz (masterplan committee for climate mitigation) | Mitigation | medium-sized | Rhineland-Palatinate |
| Karlsruhe | Klimaschutzbeirat (climate mitigation committee) | Mitigation | intermediate | Baden-Wuerttemberg |
| Kempten | Klimaschutzbeirat (climate mitigation committee) | Mitigation | medium-sized | Bavaria |
| Ludwigshafen | Klimabeirat (climate committee) | Adaptigation | intermediate | Rhineland-Palatinate |
| Magdeburg | Klimaallianz (climate alliance) | Mitigation | intermediate | Saxony-Anhalt |
| Mainz | Klimaschutz-Beirat (climate mitigation committee) | Mitigation | intermediate | Rhineland-Palatinate |
| Muenster | Klimabeirat (climate committee) | Mitigation | intermediate | North-Rhine Westphalia |
| Mülheim | Beirat für Klimaschutz (committee for climate mitigation) | Adaptigation | intermediate | North-Rhine Westphalia |
| Osnabrueck | Masterplanbeirat Klimaschutz (masterplan committee for climate mitigation) | Mitigation | intermediate | Lower Saxony |
| Potsdam | Klimabeirat (climate committee) | Adaptigation | intermediate | Brandenburg |
| Würzburg | Klimabeirat (climate committee) | Adaptigation | intermediate | Bavaria |

Section 4.1



Section 4.2

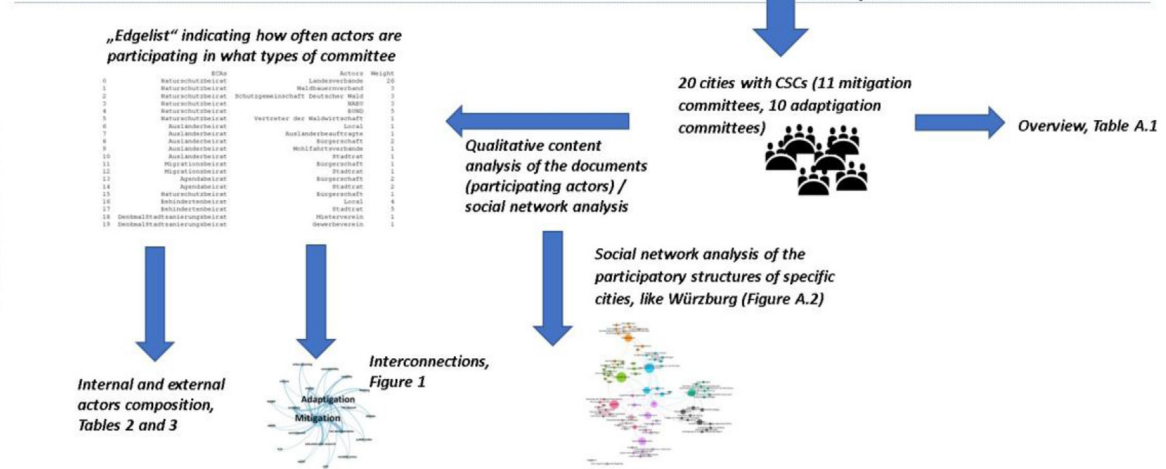


Fig. A1. Data collection and analysis leading to analyses and results (section 4). ECA refers to “external-internal collective actors” (such as committees or boards). CSC refers to “climate-specific committees” (mitigation and adaptation committees), CIC refers to “climate-integrative committees” (non-climate-specific committees, such as mobility committees or architectural advisory boards).

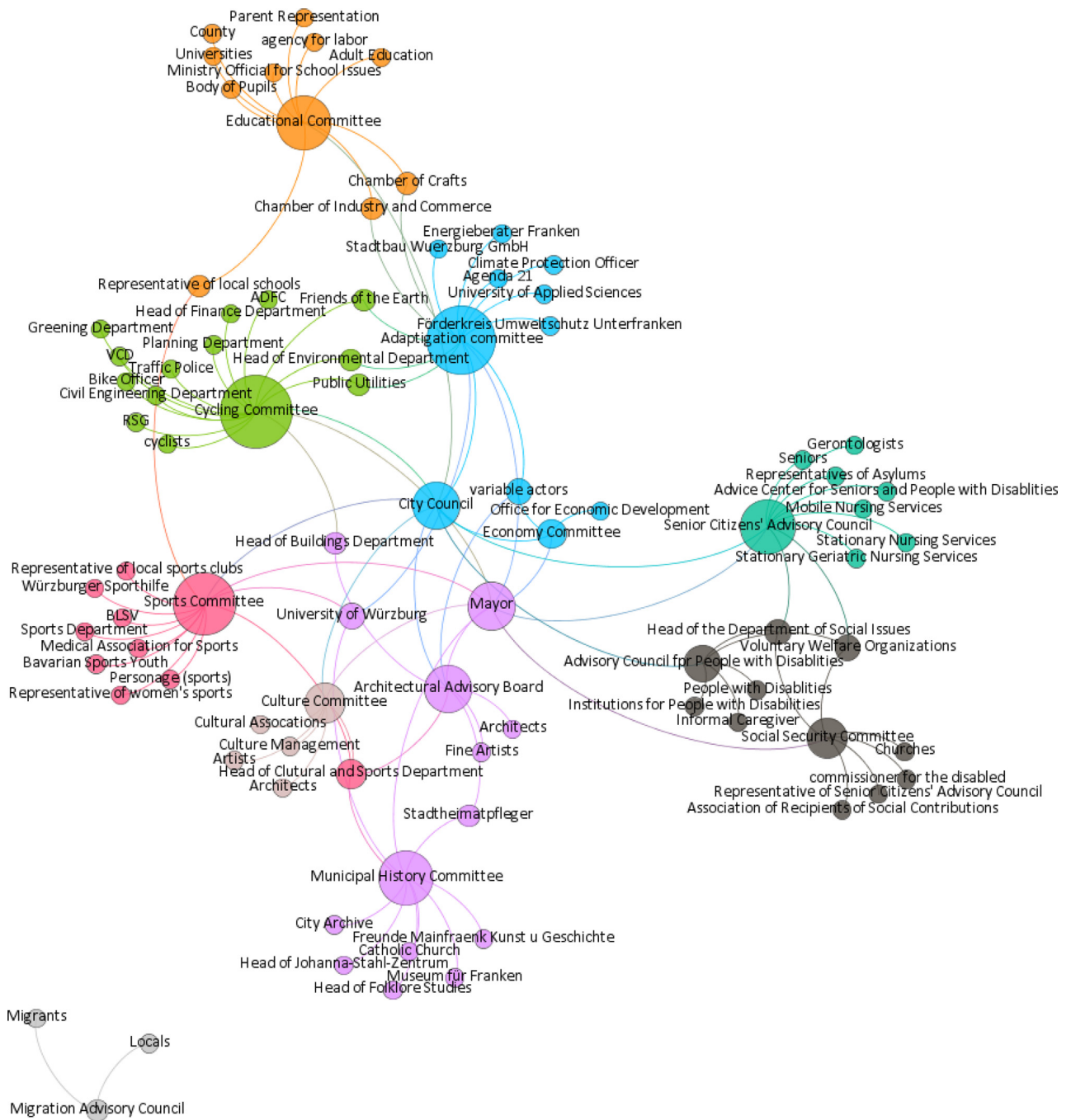


Fig. A2. A bipartite network graph showing participants in advisory committees in Würzburg, and interconnections between them. The distribution of the committee and actors nodes highlights homophilous clusters with few interconnections.

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Appendix B – Supplementary material

Appendix B.1: Data tables for Paper 2

Table 11 Organizational and conceptual institutionalization of mitigation and adaptation (ORG, IPI), and the absolute co-occurrences of mitigation and adaptation terms (in German) in city council resolutions of 72 German cities (01.01.2015-30.04.2019). h_{MAX} indicates the maximum value of the relative co-occurrences.

| City | ORG | IPI | Occurrence of singular terms (01.01.2015-30.04.2019) | | | | | Co-occurrences (01.01.2015-30.04.2019) | | | | h_{MAX} |
|---------------------|------------|------------|--|-----------------|------------|------------|-----------------------|--|------------|------------|-----------------------|-----------|
| | | | Mitigation | | Adaptation | | | "Klimaschutz" \cap ... | | | | |
| | | | Klimaschutz | Klima-anpassung | Stadtklima | Klimafolge | Klimawandel-anpassung | Klima-anpassung | Stadtklima | Klimafolge | Klimawandel-anpassung | |
| Amberg | partial | partial | 60 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00 |
| Ansbach | inclusive | partial | 129 | 4 | 2 | 0 | 0 | 3 | 2 | 0 | 0 | 0,02 |
| Aschaffenburg | inclusive | fragmented | 27 | 10 | 4 | 0 | 0 | 6 | 1 | 0 | 0 | 0,19 |
| Augsburg | partial | fragmented | 31 | 1 | 12 | 1 | 4 | 1 | 3 | 1 | 1 | 0,08 |
| Baden-Baden | partial | fragmented | 88 | 16 | 38 | 5 | 0 | 15 | 26 | 3 | 0 | 0,26 |
| Bamberg | inclusive | fragmented | 47 | 5 | 10 | 1 | 0 | 4 | 0 | 1 | 0 | 0,08 |
| Bochum | inclusive | inclusive | 454 | 191 | 99 | 1 | 24 | 127 | 47 | 1 | 21 | 0,25 |
| Bonn | inclusive | inclusive | 168 | 35 | 18 | 2 | 1 | 20 | 5 | 2 | 0 | 0,11 |
| Bottrop | inclusive | inclusive | 385 | 134 | 64 | 0 | 6 | 81 | 46 | 0 | 5 | 0,18 |
| Brandenburg (Havel) | inclusive | inclusive | 51 | 4 | 6 | 2 | 0 | 4 | 6 | 2 | 0 | 0,12 |
| Braunschweig | inclusive | fragmented | 210 | 5 | 143 | 2 | 0 | 5 | 49 | 0 | 0 | 0,16 |
| Coburg | partial | partial | 48 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0,02 |
| Cologne | inclusive | fragmented | 770 | 80 | 573 | 0 | 16 | 59 | 170 | 0 | 10 | 0,14 |
| Cottbus | partial | partial | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00 |
| Darmstadt | inclusive | fragmented | 87 | 9 | 5 | 1 | 0 | 4 | 4 | 1 | 0 | 0,05 |
| Delmenhorst | partial | partial | 133 | 14 | 3 | 0 | 0 | 10 | 3 | 0 | 0 | 0,07 |
| Dresden | fragmented | fragmented | 83 | 82 | 47 | 0 | 3 | 7 | 1 | 0 | 0 | 0,04 |
| Düsseldorf | inclusive | fragmented | 167 | 46 | 46 | 4 | 0 | 25 | 12 | 4 | 0 | 0,13 |
| Duisburg | inclusive | fragmented | 402 | 96 | 110 | 4 | 8 | 50 | 52 | 3 | 8 | 0,11 |
| Eisenach | partial | partial | 8 | 2 | 4 | 0 | 0 | 2 | 1 | 0 | 0 | 0,25 |
| Erlangen | inclusive | fragmented | 12 | 13 | 5 | 0 | 1 | 8 | 4 | 0 | 0 | 0,47 |
| Essen | inclusive | inclusive | 445 | 152 | 123 | 94 | 13 | 123 | 68 | 87 | 12 | 0,26 |
| Flensburg | inclusive | fragmented | 22 | 6 | 2 | 3 | 1 | 6 | 1 | 2 | 1 | 0,27 |
| Frankfurt/Oder | inclusive | partial | 21 | 0 | 6 | 0 | 0 | 0 | 5 | 0 | 0 | 0,23 |

| | | | | | | | | | | | | |
|---------------------------|------------|------------|-----|-----|-----|----|----|----|-----|----|----|------|
| Frankfurt (Main) | fragmented | fragmented | 233 | 60 | 131 | 6 | 6 | 9 | 3 | 0 | 0 | 0,03 |
| Freiburg (Breisgau) | fragmented | fragmented | 68 | 12 | 2 | 1 | 1 | 2 | 0 | 1 | 1 | 0,03 |
| Fürth | partial | partial | 5 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0,00 |
| Gelsenkirchen | inclusive | fragmented | 347 | 20 | 19 | 4 | 4 | 18 | 15 | 3 | 3 | 0,05 |
| Gera | partial | partial | 42 | 3 | 18 | 1 | 0 | 3 | 5 | 1 | 0 | 0,09 |
| Göttingen | fragmented | inclusive | 114 | 3 | 12 | 0 | 0 | 2 | 6 | 0 | 0 | 0,05 |
| Hagen | inclusive | fragmented | 110 | 28 | 23 | 7 | 3 | 26 | 15 | 7 | 2 | 0,23 |
| Halle (Saale) | fragmented | inclusive | 9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00 |
| Hamm | inclusive | partial | 152 | 7 | 9 | 0 | 1 | 5 | 6 | 0 | 1 | 0,04 |
| Heidelberg | inclusive | fragmented | 383 | 14 | 92 | 0 | 4 | 9 | 28 | 0 | 1 | 0,06 |
| Heilbronn | inclusive | fragmented | 38 | 7 | 20 | 0 | 0 | 7 | 12 | 0 | 0 | 0,26 |
| Herne | inclusive | fragmented | 59 | 16 | 9 | 3 | 1 | 9 | 5 | 3 | 0 | 0,14 |
| Kaiserslautern | inclusive | inclusive | 148 | 31 | 63 | 7 | 2 | 16 | 52 | 5 | 2 | 0,33 |
| Karlsruhe | inclusive | inclusive | 120 | 30 | 16 | 1 | 0 | 20 | 8 | 0 | 0 | 0,15 |
| Kassel | inclusive | fragmented | 178 | 34 | 72 | 1 | 0 | 29 | 32 | 0 | 0 | 0,16 |
| Kempton (Allgäu) | partial | partial | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00 |
| Kiel | partial | partial | 244 | 8 | 12 | 1 | 1 | 7 | 10 | 1 | 1 | 0,04 |
| Krefeld | inclusive | fragmented | 162 | 31 | 46 | 12 | 0 | 30 | 24 | 12 | 0 | 0,18 |
| Leipzig | inclusive | fragmented | 91 | 10 | 24 | 1 | 0 | 7 | 7 | 0 | 0 | 0,07 |
| Lübeck | inclusive | fragmented | 23 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0,04 |
| Magdeburg | inclusive | fragmented | 317 | 47 | 84 | 1 | 41 | 27 | 33 | 1 | 20 | 0,09 |
| Mönchengladbach | partial | partial | 43 | 4 | 4 | 2 | 0 | 4 | 3 | 1 | 0 | 0,09 |
| Mülheim (Ruhr) | inclusive | inclusive | 87 | 22 | 9 | 0 | 1 | 22 | 2 | 0 | 0 | 0,25 |
| Munich | inclusive | fragmented | 100 | 82 | 151 | 5 | 1 | 56 | 78 | 5 | 1 | 0,45 |
| Neustadt (Weinstrasse) | partial | partial | 104 | 0 | 13 | 0 | 1 | 0 | 5 | 0 | 1 | 0,04 |
| Nuremberg | inclusive | inclusive | 238 | 126 | 161 | 1 | 8 | 95 | 102 | 0 | 7 | 0,35 |
| Oberhausen | inclusive | inclusive | 151 | 38 | 34 | 23 | 5 | 33 | 27 | 21 | 5 | 0,21 |
| Offenbach (Main) | inclusive | inclusive | 220 | 50 | 30 | 2 | 7 | 27 | 22 | 0 | 1 | 0,11 |
| Oldenburg | inclusive | partial | 114 | 11 | 4 | 0 | 1 | 5 | 3 | 0 | 1 | 0,04 |
| Osnabrück | inclusive | fragmented | 309 | 32 | 171 | 7 | 0 | 26 | 77 | 4 | 0 | 0,19 |
| Passau | absent | absent | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00 |

| | | | | | | | | | | | | |
|---------------|------------|------------|-----|----|----|----|---|----|----|----|---|------|
| Pforzheim | inclusive | fragmented | 56 | 6 | 27 | 3 | 0 | 5 | 13 | 1 | 0 | 0,19 |
| Potsdam | inclusive | inclusive | 51 | 3 | 3 | 4 | 0 | 2 | 1 | 2 | 0 | 0,04 |
| Regensburg | fragmented | fragmented | 116 | 7 | 15 | 0 | 0 | 6 | 2 | 0 | 0 | 0,05 |
| Rosenheim | partial | inclusive | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00 |
| Rostock | partial | partial | 43 | 1 | 9 | 0 | 1 | 1 | 3 | 0 | 1 | 0,06 |
| Salzgitter | partial | partial | 66 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0,02 |
| Schweinfurt | inclusive | partial | 64 | 1 | 7 | 0 | 0 | 1 | 1 | 0 | 0 | 0,02 |
| Schwerin | inclusive | fragmented | 133 | 92 | 21 | 0 | 0 | 19 | 3 | 0 | 0 | 0,09 |
| Suhl | absent | absent | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00 |
| Trier | fragmented | fragmented | 9 | 0 | 6 | 1 | 0 | 0 | 1 | 1 | 0 | 0,11 |
| Weimar | partial | partial | 39 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00 |
| Wiesbaden | inclusive | fragmented | 108 | 22 | 57 | 10 | 0 | 19 | 49 | 10 | 0 | 0,42 |
| Wilhelmshaven | partial | partial | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00 |
| Wolfsburg | partial | partial | 18 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00 |
| Wuppertal | inclusive | fragmented | 118 | 1 | 13 | 8 | 0 | 1 | 6 | 7 | 0 | 0,06 |
| Würzburg | inclusive | inclusive | 88 | 14 | 16 | 0 | 0 | 12 | 9 | 0 | 0 | 0,13 |
| Zweibrücken | absent | partial | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00 |

Table 12 Data sources for the values of Table 11

| City | ORG | IPI | Co-occurrences (01.01.2015-30.04.2019) | Date |
|---------------------|---|---|---|------------|
| Amberg | https://amberg.de/rathaus/aemter-und-referate/klimaschutz/?L=0.com | http://amberg.de/rathaus/aemter-und-referate/klimaschutz/?L=0 | https://www.amberg.de/buergerinfo/suchen02.asp?smcrecherche=7020&__sgo=0 | 05.07.2019 |
| Ansbach | https://www.ansbach.de/media/custom/2595_1527_1.PDF?1520517227 | https://www.ansbach.de/B%C3%BCrger/Umwelt-Natur/Klimaschutz/Klimaschutzkonzept/Ergebnis | https://www.ansbach.de/Bürger/Rathaus-Service/Stadtrat-Politik/Recherche | 05.07.2019 |
| Aschaffenburg | https://www.aschaffenburg.de/Buerger-in-Aschaffenburg/Umwelt-und-Verbraucherschutz/Klimaschutz/DE_index_3803.html , eMail | https://www.aschaffenburg.de/dokumente/Buerger-in-Aschaffenburg/Umwelt-und-Verbraucherschutz/EnergieKlimaschutzkonzeptBayerUnterrmain.pdf | https://ris.aschaffenburg.de/Agendaitem.mvc | 11.07.2019 |
| Augsburg | https://www.augsburg.de/umwelt-soziales/umwelt/klima-energie/klimaschutz | https://www.stadtentwicklung-augsburg.de/stadtentwicklungskonzept/aufgaben-und-handlungsfelder | https://ratsinfo.augsburg.de/bi/allris.net.asp | 05.07.2019 |
| Baden-Baden | https://www.baden-baden.de/stadtportrait/umwelt-natur/energie-klimaschutz/integriertes-klimaschutzkonzept/ | http://docplayer.org/62642844-Stadtklimaanalyse-baden-baden.html | https://baden-baden.more-rubin1.de/ | 05.07.2019 |
| Bamberg | https://www.klimaallianz-bamberg.de/kontakt/ | https://www.stadt.bamberg.de/index.php?La=1&object=tx_2730.15415.1 | https://www.stadt.bamberg.de/buergerinformationssystem/yw010.asp | 14.10.2019 |
| Bochum | https://www.bochum.de/C125708500379A31/vwContentByKey/W29YGA4S954BOCMDE | https://www.bochum.de/klimaanpassung | https://session.bochum.de/bi/suchen02.asp?&__sgo=0 | 06.07.2019 |
| Bonn | http://www.bonn.de/umwelt_gesundheit_planen_bauen_wohnen/klimaschutz/kontakt/index.html?lang=de , eMail | https://www.bonn.de/themen-entdecken/umwelt-natur/klimaschutzkonzepte-und-berichte.php | https://www2.bonn.de/bo_ris/ris_sql/agm_index.asp?e_register=0&e_content=4201&e_modus=flag_volltext&e_volltext=Yes | 11.10.2019 |
| Bottrop | https://bottrop.de/vv/oe/dezernat4/68/11301010000111292.php | https://bottrop.de/wohnen-umwelt-verkehr/umwelt/Integriertes-Klimaschutzkonzept.php | https://ratsinfo.bottrop.de/buergerinfo/suchen02.asp?smcrecherche=7020&__sgo=0 | 11.10.2019 |
| Brandenburg (Havel) | https://www.stadt-brandenburg.de/leben/stadtplanung/klimaschutz/ | https://www.stadt-brandenburg.de/leben/stadtplanung/klimaschutz/klimaschutzkonzept/ | https://www.stadt-brandenburg.de/rathaus/stadtverordnete/textrecherche/ | 07.07.2019 |
| Braunschweig | http://braunschweig.de/leben/umwelt_naturschutz/klima/index.html | http://braunschweig.de/leben/umwelt_naturschutz/klima/stadtklima/stadtklima_start.html | https://ratsinfo.braunschweig.de/bi/yw010.asp | 08.07.2019 |
| Coburg | https://www.coburg.de/Subportale/Integriertes-Klimaschutzkonzept/Wozu-ein-Klimaschutzkonzept.aspx | https://www.coburg.de/Subportale/Integriertes-Klimaschutzkonzept/Wozu-ein-Klimaschutzkonzept.aspx | https://ris.coburg.de/recherche | 08.07.2019 |
| Cologne | https://www.stadt-koeln.de/service/adressen/koordinationsstelle-klimaschutz | https://www.stadt-koeln.de/leben-in-koeln/umwelt-tiere/klima/integrierte-klimaschutzkonzepte-energie-und-verkehr | https://ratsinformation.stadt-koeln.de/suchen02.asp?&__sgo=0 | 13.07.2019 |
| Cottbus | http://www.cottbus.de/verwaltung/gb_ii/umwelt_natur/energiekonzept/umsetzung_des_kommunalen_energiekonzeptes_der_stadt_cottbus.html | http://www.cottbus.de/verwaltung/gb_ii/umwelt_natur/energiekonzept/umsetzung_des_kommunalen_energiekonzeptes_der_stadt_cottbus.html | https://www.cottbus.de/opt/senator/abfrage/index.pl?S_SID=yaw9oNTUKShHA5xE2Grj9Q:2b&G_CONTEXT=mfbOcchCAf7R9VqBnJ VY_A | 08.07.2019 |
| Darmstadt | https://rathaus.darmstadt.de/public/index.php?!=1&mr=20&mr=200&p=738 | https://www.darmstadt.de/leben-in-darmstadt/klimaschutz/klimaschutzkonzept/ | https://darmstadt.more-rubin1.de/recherche/index.php | 08.07.2019 |
| Delmenhorst | https://www.delmenhorst.de/leben-in-del/umwelt/klimaschutz/klimaschutzmanagement.php | https://www.delmenhorst.de/leben-in-del/umwelt/klimaschutz/klimaschutzkonzept.php | http://www.sitzungsdienst-delmenhorst.de/bi/yw010.asp | 08.07.2019 |
| Dresden | https://www.dresden.de/de/stadtraum/umwelt/umwelt/klima-und-energie/klimaschutz.php | https://www.dresden.de/de/stadtraum/umwelt/umwelt/klima-und-energie/stadtklima/Berichte_und_Analyse.php | http://ratsinfo.dresden.de/suchen03.php | 09.07.2019 |
| Düsseldorf | https://www.duesseldorf.de/umweltamt/umweltthemen-von-a-z/klimaschutz.html | https://www.duesseldorf.de/umweltamt/umweltthemen-von-a-z/klimaschutz/klimaschutz-komplett/klimaanpassung/klimaanpassungskonzept.html | https://www.duesseldorf.de/rat/ratsinfo.html | 09.07.2019 |
| Duisburg | https://www.duisburg.de/vv/oe/dezernat-V/31/klimaschutz/klimaschutz.php | https://www2.duisburg.de/micro2/umwelt/klima/inhalt/102010100000356176.php | https://sessionnet.krz.de/duisburg/bi/suchen02.asp?smcrecherche=7020&__sgo=0 | 09.07.2019 |
| Eisenach | eMail | https://www.eisenach.de/startseite/newsdetails/eisenach-ist-die-erste-stadt-thueringens-mit-einer-co2-bilanz | https://www.eisenach.de/rathaus/stadtrat-gremien/ratsinfosystem | 09.07.2019 |
| Erlangen | https://www.erlangen.de/desktopdefault.aspx/tabid-3719_read-14824/ | https://www.must.ni.de/blog/klimaanpassung-in-erlangen/ | https://ratsinfo.erlangen.de/suchen03.php | 09.07.2019 |
| Essen | https://www.essen.de/rathaus/organisationseinheiten/organisationseinheit_1188301.de.html | https://media.essen.de/media/wwwessende/aemter/59/klima/IEKK_2009_02_03_Master.pdf | https://ris.essen.de/recherche | 10.07.2019 |

| | | | | |
|---------------------|---|--|---|------------|
| Flensburg | https://ratsinfo.flensburg.de/sdnetrim/UGhVM0hpd2NXNFdFcExjZZmeQQqmR2WowfRrM-ivtz2fplLAHvar12OxZHn-th/Beschlussvorlage_HA-40-2018.pdf#search=KlimaschutzKlimaanpassungKlimaschutzmanagementKlimaschutzmanagementsKlimaschutz | https://www.flensburg.de/Schnellnavigation/Suchergebnis/index.php?La=1&NavID=2306.72&object=med,2306.6357.1.PDF | https://ratsinfo.flensburg.de/recherche | 10.07.2019 |
| Frankfurt (Oder) | https://www.frankfurt-oder.de/Bürger/Verwaltung-Politik/Bürgerservice-A-Z/index.php?ModID=9&object=tx%7c2616.10&FID=2616.741.1&NavID=2616.14.1 | https://klimaschutz.frankfurt-oder.de/media/custom/2819_85_1.PDF?1490875176 | https://ratsinfo-mobil.de/frankfurt-oder-bi/si010_e.asp | 24.05.2019 |
| Frankfurt (Main) | Interview (eMail) | https://frankfurt.de/themen/klima-und-energie/klimaanpassung/klimaanpassungsstrategie | https://www.stvv.frankfurt.de/parlis2/parlis.html | 24.05.2019 |
| Freiburg (Breisgau) | https://www.freiburg.de/pb/1292965.html | https://www.freiburg.de/pb/1292965.html | https://ris.freiburg.de/ | 10.07.2019 |
| Fürth | https://www.fuerth.de/desktopdefault.aspx/tabid-39/287_read-1500/ | https://www.fuerth.de/Home/stadtentwicklung/umwelt/aktuelles-umwelt/fuerth-schafft-reduzierung-der-co2-emissionen.aspx | http://stadtrat.fuerth.de/recherche.php | 10.07.2019 |
| Gelsenkirchen | https://www.gelsenkirchen.de/de/Infrastruktur/Umwelt/Klima/Klimaschutz/ | https://www.gelsenkirchen.de/de/Infrastruktur/Umwelt/Klima/Stadtklima/ | https://ratsinfo.gelsenkirchen.de/ratsinfo/gelsenkirchen/Search.html;jsessionid=6018CEC8A87F54B4B897C2100758E744 | 11.07.2019 |
| Gera | https://www.gera.de/sixcms/detail.php?id=156678 | https://www.gera.de/sixcms/detail.php?id=156678 | https://gera.ratsinfomanagement.net/recherche | 11.07.2019 |
| Göttingen | https://www.goettingen.de/verwaltung/struktur/details/klimaschutz-und-energie.html | https://www.goettingen.de/rathaus/konzepte/umwelt-und-klimaschutz/klimaplan-stadtentwicklung.html | https://www.goettingen.de/rathaus/service/buerger-informationportal/volltextsuche.html | 23.05.2019 |
| Hagen | https://www.hagen.de/web/de/fachbereiche/fb_69/fb_69_05/fb_69_0502/integriertes_klimaschutzkonzept.html | https://www.hagen.de/web/de/fachbereiche/fb_69/fb_69_05/fb_69_0505/integriertes_klimaanpassungskonzept.htm?cmcall=true& | https://www.hagen.de/irj/portal/AllrisB | 11.07.2019 |
| Halle (Saale) | http://www.halle.de/de/Verwaltung/Verwaltungsorganisation/ | http://www.halle.de/de/Verwaltung/Umwelt/Klimaschutz-und-Energie/Klimaschutzkonzept/ | http://buergerinfo.halle.de/suchen01.asp | 11.10.2019 |
| Hamm | https://www.hamm.de/de/umwelt/klimaschutz/konzern-stadt-hamm/organisation-des-klimaschutzes/organisation.html | https://www.hamm.de/index.php?id=8434 | https://www.hamm.de/ratplus/#!RechercheView | 11.07.2019 |
| Heidelberg | https://www.heidelberg.de/hd.Lde/-/Behoerdenwegweiser/;oe6012395 | https://www.heidelberg.de/site/Heidelberg_ROOT/get/documents_E-1056338902/heidelberg/Objektdatenbank/31/PDF/Luft%20und%20L%C3%A4rm/31_pdf_stadtklima-2015_kliimaanalyse.pdf | https://ww1.heidelberg.de/buergerinfo/suchen01.asp | 07.06.2019 |
| Heilbronn | https://www.klimaschutz-heilbronn.de/akteure/klimaschutzleitstelle/ | https://www.heilbronn.de/fileadmin/daten/stadtheilbronn/bi-lder/umwelt_mobiltaet/klimaschutz/Gesamtstaedtische_Kliimaanalyse.pdf | https://heilbronn-sitzungsdienst.kivbf.de/bi/suchen02.asp?smcrecherche=7020&__sgo=0 | 14.10.2019 |
| Herne | https://www.herne.de/Stadt-und-Leben/Umwelt/Klima/ | https://www.herne.de/PDF/Umwelt/Kliimaanalyse_Stadt_Herne_2018(1).pdf | https://www.herne.de/allris/yw010.asp | 12.07.2019 |
| Kaiserslautern | Interview (eMail) | https://www.kaiserslautern.de/sozial_leben_wohnen/umwelt/klimaschutz/konzept/index.html.de , https://www.kaiserslautern.de/sozial_leben_wohnen/umwelt/klimaanpassung/index.html.de | https://ris.kaiserslautern.de/buergerinfo/suchen03.php?_nvor=1&__axxdat_full=01.01.2015&__exxdat_full=30.04.2019&__xnisort=wd&__swords=klimaschutz&__swnot=&__sgo=netgo&__sao=0&__svolltext=&__sseite=5&__sseiteis1=1&__sseiteis2=27&__sseiteis3=52&__sseiteis4=77&__sseiteis5=102&__sseiteis6=127 | 14.10.2019 |
| Karlsruhe | (Steiling, 2015) | (Steiling, 2015) | https://web3.karlsruhe.de/Gemeinderat/ris/bi/suchen03.php?_nvor=1&__axxdat_full=01.01.2015&__exxdat_full=30.04.2019&__xnisort=wd&__swords=klimaanpassung&__swnot=&__sgo=Suchen&__sao=0&__svolltext=&__sseite=1&__sseiteis1=1&__sseiteis2=26 | 14.10.2019 |
| Kassel | https://www.kassel.de/service/oe/Dezernat_-_DEZ/VI_-_Dezernat_VI_-_Stadtentwicklung_Bauen_und_Umwelt/67_-_Umwelt-und_Gartenamt/67_-_Umwelt-und_Gartenamt.php | https://www.kassel.de/buerger/umwelt_und_klima/umwelt_und_klimaschutz/klimaschutz/klimafunktionskarte.php | https://wwwsv1.stadt-kassel.de/sdnet4/recherche | 12.07.2019 |

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|------------------------|--|--|--|------------|
| Kempen (Allgäu) | https://www.kempen.de/stabsstelle-klimaschutz-10343.html , eMail | https://www.kempen.de/masterplan-2050-795.html | https://www.kempen.de/buergerinfoportal-1076.html | 14.10.2019 |
| Kiel | https://www.kiel.de/de/politik_verwaltung/service/_organisationseinheit.php?id=238877888 | https://www.kiel.de/de/umwelt_verkehr/klimaschutz/masterplan100prozentklimaschutz/massnahmen.php | https://ratsinfo.kiel.de/bi/yw010.asp | 13.07.2019 |
| Krefeld | https://www.krefeld.de/de/umwelt/39-fachbereich-umwelt-und-verbraucherschutz/ | https://www.krefeld.de/de/umwelt/klimaschutzkonzept-fuer-krefeld/ | https://ris.krefeld.de/recherche | 13.07.2019 |
| Leipzig | https://www.leipzig.de/umwelt-und-verkehr/energie-und-klima/anpassung-an-den-klimawandel/#c51907 | https://www.leipzig.de/umwelt-und-verkehr/energie-und-klima/stadtklima/ | https://ratsinfo.leipzig.de/bi/yw010.asp | 14.07.2019 |
| Lübeck | http://unv.luebeck.de/klimaschutz/klimaschutzleitstelle.html | http://unv.luebeck.de/klimaschutz/Klimawandel.html | http://www.luebeck.de/stadt_politik/buergerinfo/bi/yw010.asp | 14.07.2019 |
| Magdeburg | https://www.magdeburg.de/Start/Bürger-Stadt/System/Adressen/index.php?&object=tx,37.6876.1&ModID=9&FID=37.2047.1&TypSel=1.100&kat=37.157&La=1 , eMail | Interview (eMail) | https://ratsinfo.magdeburg.de/infobi.asp | 03.06.2019 |
| Mönchengladbach | https://www.moenchengladbach.de/de/rathaus/buergerinfo-a-z/planen-bauen-mobilitaet-umwelt-dezernat-vi/fachbereich-umwelt-64/landschaft-luftklima-immissionen/klimaschutz/klimaschutz-in-moenchengladbach/ Interview (eMail) | https://www.moenchengladbach.de/de/rathaus/buergerinfo-a-z/planen-bauen-mobilitaet-umwelt-dezernat-vi/fachbereich-umwelt-64/landschaft-luftklima-immissionen/klimaschutz/klimaschutz-in-moenchengladbach/ Interview (eMail) | https://www.itk-rheinland.de/ratsinfo/moenchengladbach/Search.html?ss=-1 | 14.07.2019 |
| Mülheim (Ruhr) | Interview (eMail) | Interview (eMail) | https://ratsinfo.muelheim-ruhr.de/buerger/allris.net.asp | 24.05.2019 |
| Munich | Interview (eMail) | Interview (eMail) | https://www.ris-muenchen.de/RII/RII/ris_fraktionen_trefferliste.jsp?SuchButton=Suche%20starten&txtVon=tt.mm.jjjj&selWahlperiode=3184778&txtPosition=0&txtThemen=ToDo&txtBis=tt.mm.jjjj%27 https://buergerinfo.neustadt.eu/suchen03.php | 05.06.2019 |
| Neustadt (Weinstrasse) | https://www.neustadt.eu/Bürger-Leben/Natur-Umwelt | https://www.neustadt.eu/Bürger-Leben/Natur-Umwelt | https://buergerinfo.neustadt.eu/suchen03.php | 14.07.2019 |
| Nuremberg | https://www.nuernberg.de/internet/umweltamt/klima_energie.html | https://www.nuernberg.de/internet/klimaschutz/klimawandelanpassung.html | https://online-service2.nuernberg.de/buergerinfo/suchen02.asp?smcrecherche=7020&_sgo=0 https://allris.oberhausen.de/bi/yw010.asp | 14.07.2019 |
| Oberhausen | https://www.oberhausen.de/de/index/rathaus/verwaltung/umwelt-gesundheit-oekologische-stadtentwicklung/umwelt/klimaschutz_und_energie.php | https://www.oberhausen.de/de/index/rathaus/verwaltung/umwelt-gesundheit-oekologische-stadtentwicklung/umwelt/klimaschutz_und_energie/energie-und-klima-material/ksk_ob_endbericht_final.pdf https://www.offenbach.de/microsite/klimaschutzaktion/Klimawandel/Anpassungskonzept/klimaanpassungsstrategie-offenbach.php | http://pio.offenbach.de/index.php?quelle=&suche%5Bzeige_links%5D=&suche%5Bquelle%5D=suche&suche%5Bvolltext%5D=&suche%5Bdrucksachennummer%5D=&suche%5Btragsteller%5D=&suche%5Bjahr_von_Year%5D=&suche%5Bjahr_bis_Year%5D=&suche%5Bdokument%5D%5B0%5D=1&suche%5Bdokument%5D%5B1%5D=2&suche%5Bdokument%5D%5B2%5D=3&suche%5Bdokument%5D%5B3%5D=5&suche%5Bdokument%5D%5B4%5D=6&suche%5Bsortierung%5D=&aktiv=suche&seite=0&suche%5Bsuche_ausfuehren%5D=0 https://buergerinfo.oldenburg.de/suchen03.php?smcrecherche=7020 | 14.07.2019 |
| Offenbach (Main) | https://www.offenbach.de/leben-in-of/umwelt-klimaschutz/index.php | https://www.offenbach.de/microsite/klimaschutzaktion/Klimawandel/Anpassungskonzept/klimaanpassungsstrategie-offenbach.php | http://pio.offenbach.de/index.php?quelle=&suche%5Bzeige_links%5D=&suche%5Bquelle%5D=suche&suche%5Bvolltext%5D=&suche%5Bdrucksachennummer%5D=&suche%5Btragsteller%5D=&suche%5Bjahr_von_Year%5D=&suche%5Bjahr_bis_Year%5D=&suche%5Bdokument%5D%5B0%5D=1&suche%5Bdokument%5D%5B1%5D=2&suche%5Bdokument%5D%5B2%5D=3&suche%5Bdokument%5D%5B3%5D=5&suche%5Bdokument%5D%5B4%5D=6&suche%5Bsortierung%5D=&aktiv=suche&seite=0&suche%5Bsuche_ausfuehren%5D=0 https://buergerinfo.oldenburg.de/suchen03.php?smcrecherche=7020 | 15.07.2019 |
| Oldenburg | https://www.oldenburg.de/metanavigation/datenschutz/datenschutzerklaerungen/amt-fuer-umweltschutz-und-bauordnung.html?L=0 | https://www.oldenburg.de/startseite/leben-wohnen/umwelt/energie-klimaschutz/integriertes-energie-und-klimaschutzkonzept.html | https://buergerinfo.oldenburg.de/suchen03.php?smcrecherche=7020 | 15.07.2019 |
| Osnabrück | https://buerger.osnabrueck.de/public/index.php?l=172&mr=30&o=253 | https://www.osnabrueck.de/stadtklima/ | http://ris.osnabrueck.de/bi/yw010.asp | 15.07.2019 |
| Passau | absent | absent | https://www.ratsinfo.passau.de/recherche | 15.07.2019 |
| Pforzheim | https://www.pforzheim.de/buerger/buergerservice/pf0/service-bw/organisationseinheiten/show/6003064-amt-fuer-umweltschutz.html | https://www.pforzheim.de/stadt/umwelt-natur/luft-und-klima/stadtklimanalyse.html | https://buergerinfo.pforzheim.de/yw010.asp | 15.07.2019 |

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|---------------|---|---|---|------------|
| Potsdam | (Thieken et al., 2018) | (Thieken et al., 2018) | https://egov.potsdam.de/bi/allris.net.asp | 04.06.2019 |
| Regensburg | https://www.regensburg.de/fm/RBG_INTER1S_VM.a.253.de/r_upload/klimaschutzaktivitaeten-in-regensburg-2017.pdf | https://www.regensburg.de/fm/121/1-klimagutachten-gutachten-regensburg-2014b.pdf | https://www.regensburg.de/rathaus/stadtpolitik/regensburger-sitzungsdienst/textrecherche | 15.07.2019 |
| Rosenheim | https://www.rosenheim.de/klimaschutz.html | https://www.rosenheim.de/fileadmin/Dateien/Umweltamt/67_Gesamttext_Egebnisbrosch%C3%BCre_RO25b.pdf?no_cache=1 | https://www.rosenheim-allris.sitzung-online.de/allrisbi/tr010?1 | 17.07.2019 |
| Rostock | https://rathaus.rostock.de/de/umwelt_gesellschaft/klimaschutz/leitsstelle/251060 | https://rathaus.rostock.de/sixcms/media.php/rostock_01.a.4984.de/datei/Klimaschutz%20Rahmenkonzept%20kl%20Kopie.pdf | https://ksd.rostock.de/bi/yw010.asp | 17.07.2019 |
| Salzgitter | https://www.salzgitter.de/rathaus/fachdienstuebersicht/umwelt/126010100000081946.php | https://www.salzgitter.de/rathaus/fachdienstuebersicht/umwelt/klimaschutzkonzept.php | https://sitzungsdienst.salzgitter.de/buergerinfo/yw010.asp | 17.07.2019 |
| Schweinfurt | https://www.schweinfurt.de/leben-freizeit/umwelt/klimaschutzkonzept/index.html | https://www.schweinfurt.de/leben-freizeit/umwelt/klimaschutzkonzept/4757.Integriertes-kommunales-Klimaschutzkonzept-der-Stadt-Schweinfurt.html | https://schweinfurt.more-rubin1.de/recherche/index.php | 18.07.2019 |
| Schwerin | https://www.schwerin.de/politik-verwaltung/stadtverwaltung/verwaltungsstruktur/stabstelle-fuer-klimamanagement-mobilitaet/ | https://www.schwerin.de/mein-schwerin/leben/umwelt-klima-energie/klima-mobilitaet/integriertes-klimaschutzkonzept/ | https://bis.schwerin.de/suchen02.asp?__sgo=0 | 18.07.2019 |
| Suhl | absent | absent | https://www.suhltrift.de/component?option=com_docman/task/search_form/Itemid,1421/ | 18.07.2019 |
| Trier | https://trier.de/umwelt-verkehr/energie-klima/solardachkataster/ | https://trier.de/umwelt-verkehr/energie-klima/stadtklimaanalyse/ | https://info.trier.de/bi/yw010.asp | 18.07.2019 |
| Weimar | https://stadt.weimar.de/umwelt-und-klimaschutz/klimaschutz/ | https://stadt.weimar.de/fileadmin/redaktion/Dokumente/umwelt/klimaschutz/klimaschutzkonzept/111206Klimaschutzkonzept_01.pdf | NA | 14.10.2019 |
| Wiesbaden | https://www.wiesbaden.de/leben-in-wiesbaden/umwelt/stadtklima/klimprax.php | https://www.wiesbaden.de/leben-in-wiesbaden/umwelt/natur-landschaft/fachgutachten-stadtklima.php | https://piwi.wiesbaden.de/suche?1 | 18.07.2019 |
| Wilhelmshaven | https://www.wilhelmshaven.de/Stadtverwaltung/Dienststellen/63_Amt_fuer_Umweltschutz_und_Bauordnung/63-05/63-05_Klimaschutz.php | https://www.wilhelmshaven.de/Stadtverwaltung/Dienststellen/63_Amt_fuer_Umweltschutz_und_Bauordnung/63-05/63-05_Klimaschutz.php | https://pv-rat.de/ratsinfo/wilhelmshaven/Search.html?sessionid=A55E7359BB5262D6A0CC1F7BD4F677C8 | 18.07.2019 |
| Wolfsburg | https://www.wolfsburg.de/leben/umweltnaturschutz/klimaschutz | https://www.wolfsburg.de/leben/umweltnaturschutz/klimaschutz | https://ratsinfob.stadt.wolfsburg.de/tr010?1 | 18.07.2019 |
| Wuppertal | https://www.wuppertal.de/vv/oe/100.php | https://www.wuppertal.de/microsite/klimaschutz/aktuelles/klimawandel.php | https://ris.wuppertal.de/suchen03.php?smcrecherche=7020 | 18.07.2019 |
| Würzburg | (Thieken et al., 2018) | (Thieken et al., 2018) | http://www.wuerzburg.sitzung-online.de/BI/allris.net.asp | 23.05.2019 |
| Zweibrücken | absent | https://www.stadtwerke-zw.de/unternehmen/klimaschutzkonzept/ | http://buergerinfo.zweibruecken.de/suchen03.php?smcrecherche=7020 | 18.07.2019 |

Appendix B.2: R-scripts for Paper 2

This R-script was used to conduct the analytic operations and graphical illustrations in Paper 2. The underlying source “Paper2.csv” contains the data depicted in Appendix B.1. The original source can be obtained from the author.

```
#####  
##                               ##  
##                               ##  
## R codes for Hypothesis Testing in Paper 2  ##  
##                               ##  
##                               ##  
#####  
  
#####  
##                               ##  
## Libraries and importing data             ##  
##                               ##  
#####  
  
# Libraries  
library(dplyr)  
library(ggplot2)  
library(janitor)  
library(tidyr)  
library(ggbeeswarm)  
library(FSA)  
library(gridExtra)  
library(readr)  
library(ggpubr)  
  
# Read data  
  
all <- read_delim("Paper2.csv", delim=";", na=c("", "NA", "unclear"))  
  
#####  
##                               ##  
## Checking and tidying data             ##  
##                               ##  
#####  
  
# Taming data  
  
basic_data <- all %>%  
  filter(!is.na(klimaschutz)) %>%  
  clean_names(case='lower_camel') %>%  
  # Generating hMAX - variables  
  mutate(strengthKlimaanpassung = klimaschutzKlimaanpassung /  
        (klimaschutz+klimaanpassung-klimaschutzKlimaanpassung),  
        strengthKlimaanpassung = replace_na(strengthKlimaanpassung,0),  
        strengthStadtklima = klimaschutzStadtklima / (klimaschutz + stadtklima -  
        klimaschutzStadtklima),  
        strengthKlimafolge = klimaschutzKlimafolge / (klimaschutz + klimafolge -  
        klimaschutzKlimafolge),  
        strengthKlimawandelanpassung = klimaschutzKlimawandelanpassung /  
        (klimaschutz + klimawandelanpassung -  
        klimaschutzKlimawandelanpassung),  
        maxAdaptigation = pmax(strengthKlimaanpassung, strengthStadtklima,  
        strengthKlimawandelanpassung,  
        strengthKlimafolge,na.rm=TRUE),  
        org = factor(org,levels=c('absent','partial','fragmented','inclusive')),  
        iia = factor(iia,levels=c('absent','partial','fragmented','inclusive')),  
        ipi = factor(ipi,levels=c('absent','partial','fragmented','inclusive')),  
        bbsrE = recode(bbsr,"Kleine Mittelstadt" = "small medium-sized city",  
        "Grosse Mittelstadt" = "large medium-sized city",  
        "Kleine Grossstadt" = "smaller big city",
```

```

        "Grosse Grossstadt" = "larger big city"),
bbsrE = factor(bbsrE,levels=c('small medium-sized city', 'large medium-
        sized city', 'smaller big city', 'larger big city'))

#####
##
## Analyzing the relation of the variable ORG to hMAX ##
##
#####

## Generating the boxplot

ggplot(basic_data,aes(x=org,y=maxAdaptigation,fill=org))+
  geom_beeswarm(alpha=0.6)+
  geom_boxplot(alpha=0.4)+
  theme_bw()+
  labs(title = "Joint organizational institutionalization leads to joint
        resolutions", x = "Organizational institutionalization") +
  ylab(expression('Maximum frequency of co-occurrence,h' [MAX])) +
  theme(axis.text.x = element_text(colour = "grey20", size = 12),
        axis.text.y = element_text(colour = "grey20", size = 10),
        text = element_text(size = 10),
        legend.position='none')+
  scale_fill_discrete(name = "Organizational Structure")

## Test for statistical significance

kruskal.test(maxAdaptigation ~ org,basic_data) # Kruskal-Wallis-Test
dunnTest(maxAdaptigation ~ org,basic_data, method="holm") # Dunn-Test with Holm's
Sequential Bonferroni method

#####
##
## Analyzing the relation of the variable IPI to hMAX ##
##
#####

## Generating the boxplot

ggplot(basic_data,aes(x=ipi,y=maxAdaptigation,fill=ipi))+
  geom_beeswarm(alpha=0.6)+
  geom_boxplot(alpha=0.4)+
  theme_bw()+
  labs(title = "Explicitely joint climate plans are not necessary for joint
        resolutions", x = "Institutionalization in Climate Action Plans")+
  ylab(expression('Maximum frequency of co-occurrence,h' [MAX])) +
  theme(axis.text.x = element_text(colour = "grey20", size = 12),
        axis.text.y = element_text(colour = "grey20", size = 12),
        text = element_text(size = 10),
        legend.position='none')+
  scale_fill_discrete(name = "Climate Action Plans")

## Test for statistical significance

kruskal.test(maxAdaptigation ~ ipi,basic_data) # Kruskal-Wallis-Test
dunnTest(maxAdaptigation ~ ipi,basic_data, method="holm") # Dunn-Test with Holm's
Sequential Bonferroni method

```

```
#####
##
## Discussion of cities with different organizational
## institutionalization in regard to their absolute
## count of resolutions:
## Frankfurt am Main, Darmstadt, Wuerzburg,
## Kaiserslautern, Osnabrueck
##
#####

disc <- basic_data %>% filter(city=="Darmstadt" | city=="Kaiserslautern" |
  city=="Wuerzburg" | city=="Osnabrueck") %>%
  mutate(mitigation = klimaschutz,
         adaptation = klimaanpassung + stadtklima + klimawandelanpassung +
            klimafolge,
         adaptigation = klimaschutzKlimaanpassung + klimaschutzStadtklima +
            klimaschutzKlimafolge +
            klimaschutzKlimawandelanpassung) %>%
  gather(key="type", value="absolute", mitigation, adaptigation, adaptation) %>%
  mutate(city_o = factor(city, levels = c('Kaiserslautern', 'Osnabrueck',
    'Darmstadt', 'Wuerzburg'))))

discF <- basic_data %>% filter(city == "Frankfurt am Main") %>%
  mutate(mitigation = klimaschutz,
         adaptation = klimaanpassung + stadtklima + klimawandelanpassung +
            klimafolge,
         adaptigation = klimaschutzKlimaanpassung + klimaschutzStadtklima +
            klimaschutzKlimafolge +
            klimaschutzKlimawandelanpassung) %>%
  gather(key="type", value="absolute", mitigation, adaptigation, adaptation)

labels <- c(fragmented = "different officials", inclusive = "same officials")

plot1 <- ggplot(disc, aes(x=type, y=absolute, fill=city, group=1)) +
  geom_col(position="dodge") +
  geom_point() +
  facet_wrap(city_o~iia, nrow=2, labeller=labeller(iia = labels)) +
  geom_line() +
  theme(legend.position = 'none') +
  ggtitle("Cities with inclusive organizational institutionalization")

plot2 <- ggplot(discF, aes(x=type, y=absolute, group=1)) +
  geom_col(position="dodge") +
  geom_point() +
  geom_line() +
  ggtitle("Frankfurt am Main:\n a city with fragmented organizational
  institutionalization")

grid.arrange(plot1, plot2, ncol=2)
```

Appendix B.3: Data tables for Paper 3

Table 13 Analyzed Climate Specific Committees, i.e. mitigation or adaptation committees. The data was gathered via official websites, email-questionnaires and telephone calls with city officials (between July and August 2018).

| City | Name | CSC type | Web-Source | Date |
|------------------|---|--------------|---|------------|
| Aschaffenburg | Energie- und Klimaschutzkommission (energy and climate mitigation commission) | Mitigation | https://www.aschaffenburg.de/Verwaltung/Stadtrat/Die-Ausschuesse/DE_index_4148_61042.html | 09.03.2018 |
| Bonn | Klimaschutzbeirat (climate mitigation committee) | Adaptigation | http://www2.bonn.de/bo_ris/ris_sql/agm_index.asp?e_register=0&e_content=3502&e_gre_id=242&e_p_p_id=9&e_gre_art=Gremien&e_caller=hbr_gremien_result | 20.04.2018 |
| Darmstadt | Klimaschutzbeirat (climate mitigation committee) | Mitigation | https://www.darmstadt.de/fileadmin/PDF-Rubriken/Leben_in_Darmstadt/klimaschutz/ksk/Verzeichnis_TN_KSB_1.pdf | 10.07.2018 |
| Dortmund | Konsultationskreis Energieeffizienz und Klimaschutz (consultation committee for energy efficiency and climate mitigation) | Adaptigation | https://www.dortmund.de/de/leben_in_dortmund/umwelt/klimaschutz_energie/klimaschutz_2020/kek/start_kek/index.html | 24.05.2018 |
| Frankfurt (Main) | Klimaschutzbeirat (climate mitigation committee) | Mitigation | https://www.masterplan100.de/kacheln/klimaschutzbeirat/ | 19.06.2018 |
| Frankfurt (Oder) | Klimaschutzbeirat (climate mitigation committee) | Adaptigation | https://klimaschutz.frankfurt-oder.de/Klimaschutz-Klimawandel/Klimaschutz/Klimaschutzbeirat-Klimaschutzakteure/index.php?La=1&NavID=2819.45&object=tx,2819.74.1&kat=&quo=2&sub=0 | 16.07.2018 |
| Göttingen | Klimaschutzbeirat (climate mitigation committee) | Adaptigation | https://klimaschutz.goettingen.de/pics/medien/1_1482335373/KS-Beirat_Zusammensetzung_2017.pdf | 28.06.2018 |
| Hannover | Kuratorium Klimaschutzregion Hannover (board of trustees of the climate mitigation region of Hannover) | Adaptigation | https://e-government.hannover-stadt.de/lhhSImwebdd.nsf/41637A679571BB39C12580730021FDE8/\$FILE/2334-2016_Anlage1.pdf | 10.07.2018 |
| Hannover | Klimawaisenrat (climate committee of wise men and women) | Adaptigation | https://www.hannover.de/Leben-in-der-Region-Hannover/Umwelt-Nachhaltigkeit/Klimaschutz-Energie/Akteure-und-Netzwerke/Der-Klimawaisen-Rat | 15.06.2018 |
| Heidelberg | Heidelberg-Kreis Klima und Energie (Heidelberg committee for climate and energy) | Mitigation | https://www.heidelberg.de/hd_Lde/HD/Leben/Heidelberg_Kreis+erarbeitet+Masterplan.html | 14.07.2018 |
| Kaiserslautern | Masterplanbeirat Klimaschutz (masterplan committee for climate mitigation) | Mitigation | https://kaiserslautern.de/buerger_rathaus_politik/politik/beiraete_und_vertretungen/masterplanbeirat/index.html.de | 29.06.2018 |
| Karlsruhe | Klimaschutzbeirat (climate mitigation committee) | Mitigation | Only personal communication with climate protection officer | 13.07.2018 |
| Kempten | Klimaschutzbeirat (climate mitigation committee) | Mitigation | https://ratsinfo.kempten.de/bi/kp0040.php?__kgrrn=26& | 11.06.2018 |
| Ludwigshafen | Klimabeirat (climate committee) | Adaptigation | http://www.ludwigshafen.de/presse/detail/news/2012/01/24/ludwigshafen-gruendet-klimabeirat/?cHash=36c2aff5448d170546f7238749454c21&L=0 | 07.07.2018 |
| Magdeburg | Klimaallianz (climate alliance) | Mitigation | https://www.magdeburg.de/Start/Bürger-Stadt/Leben-in-Magdeburg/Umwelt/Klimaschutzportal/Ziele-und-Fakten/Magdeburger-Klimaallianz | 08.07.2018 |
| Mainz | Klimaschutz-Beirat (climate mitigation committee) | Mitigation | http://mainz.de/medien/internet/downloads/flyer_klimaschutzbeirat.pdf | 03.07.2018 |
| Münster | Klimabeirat (climate committee) | Mitigation | https://www.stadt-muenster.de/sessionnet/sessionnetbi/getfile.php?id=307377&type=do | 04.07.2018 |
| Mülheim | Beirat für Klimaschutz (committee for climate mitigation) | Adaptigation | https://www.muelheim-ruhr.de/cms/shared/datei_download.php?uid=87eb12c1601d44d84b880e3badca612f | 08.07.2018 |
| Osnabrück | Masterplanbeirat Klimaschutz (masterplan committee for climate mitigation) | Mitigation | http://ris.osnabrueck.de/bi/___tmp/tmp/45081036241403202/241403202/01100392/92-Anlagen/03/Masterplanbeirat_Geschaeftsordnung_Neuentwurf_doc | 27.06.2018 |
| Potsdam | Klimabeirat (climate committee) | Adaptigation | https://egov.potsdam.de/bi/___tmp/tmp/45081036960421522/960421522/00398796/96.pdf | 12.06.2018 |
| Würzburg | Klimabeirat (climate committee) | Adaptigation | https://www.wuerzburg.de/m_435448_dl | 21.06.2018 |

Table 14 Analyzed committees in the category “Environment and Sustainability”

| Type | City | Committee name | Source | Date |
|------------------------------------|---------------|--------------------|---|------------|
| Agenda21-Committee | Aschaffenburg | Agenda 21 Beirat | Interview with climate protection manager | 23.07.2018 |
| Agenda21-Committee | Chemnitz | Agenda 21 Beirat | http://session-bi.stadt-chemnitz.de/kp0040.php?__kgmr=810450& | 04.05.2018 |
| Agenda21-Committee | Coburg | Agenda 21 Beirat | http://www.coburg.de/Subportale/agenda21/Startseite.aspx | 04.05.2018 |
| Agenda21-Committee | Darmstadt | Agenda 21 Beirat | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Sustainability Committee | Freiburg | Nachhaltigkeitsrat | https://www.freiburg.de/pb/site/Freiburg/get/params_E-438208575/812402/Mitglieder_des_Freiburger_Nachhaltigkeitsrats-2016-06-23.pdf | 19.06.2018 |
| Agenda21-Committee | Jena | Agenda-Beirat | https://www.jena.de/fm/694/a10.pdf | 13.06.2018 |
| Agenda21-Committee | Rostock | Agenda-Rat | http://rathaus.rostock.de/sixcms/media.php/1598/Gesch%C3%A4ftsordnung%20Agenda%2021-Rat.pdf | 18.06.2018 |
| Agenda21-Committee | Solingen | Beirat Agenda-Team | https://ratsportal.solingen.de/gremien/?__=UGhVM0hpd2NXNFdFcExjZeJPPD5bvLG14DF02oasEGE | 25.06.2018 |
| Nature Conservation Advisory Board | Aschaffenburg | Naturschutzbeirat | Interview with climate protection manager | 23.07.2018 |
| Nature Conservation Advisory Board | Aachen | Naturschutzbeirat | https://www.staedteregion-aachen.de/de/navigation/aemter/umweltamt-a-70/natur-und-landschaft/landschaftsbeirat/ | 08.03.2018 |
| Nature Conservation Advisory Board | Amberg | Naturschutzbeirat | http://amberg.de/index.php?id=4653&L=0&sword_list[]=beirat&no_cache=1 | 09.03.2018 |
| Nature Conservation Advisory Board | Bielefeld | Naturschutzbeirat | https://anwendungen.bielefeld.de/bi/kp0040.asp?__kgmr=994922& | 16.04.2018 |
| Nature Conservation Advisory Board | Bochum | Naturschutzbeirat | https://session.bochum.de/bi/kp0040.asp?__kgmr=978029 | 16.04.2018 |
| Nature Conservation Advisory Board | Bonn | Naturschutzbeirat | http://www2.bonn.de/bo_ris/ris_sql/agm_index.asp?e_register=0&e_content=3502&e_gre_id=26&e_p_p_id=10&e_gre_art=Gremien&e_caller=hbr_gremien_result | 20.04.2018 |
| Nature Conservation Advisory Board | Bottrop | Naturschutzbeirat | http://ratsinfo.bottrop.de/buergerinfo/kp0040.asp?__kgmr=605149& | 30.04.2018 |
| Nature Conservation Advisory Board | Brandenburg | Naturschutzbeirat | https://www.stadt-brandenburg.de/rathaus/beiraete/fachbeiraete/ | 30.04.2018 |
| Nature Conservation Advisory Board | Cottbus | Naturschutzbeirat | https://www.cottbus.de/verwaltung/gb_ll/umwelt_natur/unb/ | 04.05.2018 |
| Nature Conservation Advisory Board | Darmstadt | Naturschutzbeirat | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Nature Conservation Advisory Board | Dortmund | Naturschutzbeirat | https://www.dortmund.de/de/rathaus_und_buergerservice/lokalpolitik/rat_und_ausschuesse/beiraete/landschaftsbeirat/start_landschaftsbeirat/index.html | 24.05.2018 |
| Nature Conservation Advisory Board | Düsseldorf | Naturschutzbeirat | https://www.duesseldorf.de/stadtgruen/landschafts-und-naturschutz/naturschutzbeirat.html | 09.07.2018 |
| Nature Conservation Advisory Board | Duisburg | Naturschutzbeirat | https://www2.duisburg.de/micro2/duisburg_gruen/naturschutz/landschaftsplan/102010100000436804.php | 09.07.2018 |
| Nature Conservation Advisory Board | Eisenach | Naturschutzbeirat | https://www.eisenach.de/rathaus/stadtrat-gremien/naturschutzbeirat/naturschutzbeirat/#c25666 | 07.06.2018 |

| | | | | |
|------------------------------------|------------------|-------------------|---|------------|
| Nature Conservation Advisory Board | Erfurt | Naturschutzbeirat | http://www.erfurt.de/ef/de/leben/oekoumwelt/naturschutz/ehrenamt/naturschutzbeirat/index.html | 13.06.2018 |
| Nature Conservation Advisory Board | Essen | Naturschutzbeirat | siehe Dokument | 14.06.2018 |
| Nature Conservation Advisory Board | Flensburg | Naturschutzbeirat | http://www.flensburg.de/PDF/Satzung_%C3%BCber_den_Beirat_f%C3%BCr_Naturschutz_und_den_Stadtbeauftragten_f%C3%BCr_Naturschutz_in_der_Stadt_Flensburg_Naturschutzbeiratssatzung_.PDF?ObjSvrID=2306&ObjID=335&ObjLa=1&Ext=PDF&WTR=1&_ts=1446793757 | 07.06.2018 |
| Nature Conservation Advisory Board | Frankfurt (Main) | Naturschutzbeirat | https://www.frankfurt.de/sixcms/detail.php?id=3847&_ffmparf_id_inhaltj=30273 | 19.06.2018 |
| Nature Conservation Advisory Board | Gera | Naturschutzbeirat | https://www.gera.de/sixcms/detail.php?id=101330&_lang=de | 28.06.2018 |
| Nature Conservation Advisory Board | Hagen | Naturschutzbeirat | https://www.hagen.de/irj/portal/15Gremien | 11.06.2018 |
| Nature Conservation Advisory Board | Halle | Naturschutzbeirat | http://www.halle.de/de/Verwaltung/Umwelt/Natur-und-Artenschutz/Ehrenamtliche-Taetigkeit/Naturschutzbeirat/ | 15.06.2018 |
| Nature Conservation Advisory Board | Hamm | Naturschutzbeirat | https://hammwiki.info/wiki/Beirat_bei_der_unteren_Landschaftsbeh%C3%B6rde_der_Stadt_Hamm | 06.06.2018 |
| Nature Conservation Advisory Board | Herne | Naturschutzbeirat | https://www.herne.de/Stadt-und-Leben/Umwelt/Natur-und-Landschaft/Landschaftsbeirat/ | 14.06.2018 |
| Nature Conservation Advisory Board | Ingolstadt | Naturschutzbeirat | https://www.ingolstadt.de/Leben/Umwelt-Natur-Klima/Natur-Artenschutz/Naturschutzwacht | 11.06.2018 |
| Nature Conservation Advisory Board | Jena | Naturschutzbeirat | https://www.jena.de/de/stadt_verwaltung/stadtverwaltung/dezernat3/fb_bauen_umwelt/fd_umweltschutz/team_untere_naturschutzbehoerde/naturschutzbeirat/311261 | 13.06.2018 |
| Nature Conservation Advisory Board | Kaiserslautern | Naturschutzbeirat | https://kaiserslautern.de/buerger_rathaus_politik/politik/beiraete_und_vertretungen/beirat_naturschutz/index.html.de | 29.06.2018 |
| Nature Conservation Advisory Board | Kassel | Naturschutzbeirat | http://www.stadt-kassel.de/politik/beiraete/naturschutzbeirat/info/02077/index.html | 29.06.2018 |
| Nature Conservation Advisory Board | Kaufbeuren | Naturschutzbeirat | https://www.kaufbeuren.de/Portaldata/17/Resources/Rathaus/Ortsrecht/103_Geschaeftsordnung_Naturschutzbeirat.pdf | 11.06.2018 |
| Nature Conservation Advisory Board | Kiel | Naturschutzbeirat | https://www11.kiel.de/ortsrecht/root/download.php?typ=lf&fid=8acdf7e9196340f43202d29ad189055d | 29.06.2018 |
| Nature Conservation Advisory Board | Koblenz | Naturschutzbeirat | https://buergerinfo.koblenz.de/kp0040.php?__kgnr=86& | 30.06.2018 |
| Nature Conservation Advisory Board | Koeln | Naturschutzbeirat | https://www.stadt-koeln.de/mediaasset/content/pdf-rat-gremien/beirat-ulb/gesch__ftsordnung_beirat_2002.pdf | 30.06.2018 |
| Nature Conservation Advisory Board | Krefeld | Naturschutzbeirat | https://www.krefeld.de/rat/inhalt/aufgaben-des-naturschutzbeirates/ | 13.06.2018 |
| Nature Conservation Advisory Board | Leipzig | Naturschutzbeirat | https://www.leipzig.de/news/news/neuer-naturschutzbeirat-der-stadt-leipzig-startet-seine-arbeit/ | 30.06.2018 |
| Nature Conservation Advisory Board | Leverkusen | Naturschutzbeirat | http://ris.leverkusen.de/kp0040.asp?__kgnr=20 | 30.06.2018 |
| Nature Conservation Advisory Board | Mainz | Naturschutzbeirat | http://mainz.de/vv/produkte/gruen_und_naturschutz/10014010000027427.php | 03.07.2018 |

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|------------------------------------|--------------------|-------------------|---|------------|
| Nature Conservation Advisory Board | Memmingen | Naturschutzbeirat | https://stadtrecht.memmingen.de/fileadmin/Stadtrecht/SVBI/2014/SVBI-MM_2014-12-12_Nr32_S_205-205.pdf | 04.07.2018 |
| Nature Conservation Advisory Board | Mönchengladbach | Naturschutzbeirat | https://www.moenchengladbach.de/de/rathaus/buergerinfo-a-z/planen-bauen-mobilitaet-umwelt-dezernat-vi/fachbereich-umwelt-64/landschaft-luftklima-immissionen/naturschutz/beirat-bei-der-unteren-landschaftsbehoerde/ | 09.07.2018 |
| Nature Conservation Advisory Board | Münster | Naturschutzbeirat | https://www.stadt-muenster.de/umwelt/natur-und-landschaft.html | 04.07.2018 |
| Nature Conservation Advisory Board | Neumünster | Naturschutzbeirat | http://www.neumuenster.de/cms/files/5_4____naturschutzbeiratssatzung.pdf | 21.06.2018 |
| Nature Conservation Advisory Board | Nuremberg | Naturschutzbeirat | https://www.nuernberg.de/internet/umweltamt/naturschutzbeirat.html | 27.06.2018 |
| Nature Conservation Advisory Board | Oberhausen | Naturschutzbeirat | http://allris.oberhausen.de/bi/au020.asp?AULFDNR=44&altoption=Gremium | 27.06.2018 |
| Nature Conservation Advisory Board | Regensburg | Naturschutzbeirat | https://www.regensburg.de/sixcms/media.php/140/6.3531681.pdf | 16.06.2018 |
| Nature Conservation Advisory Board | Remscheid | Naturschutzbeirat | https://www.remscheid.de/rathaus-und-politik/medienpool/gremien/0.03_naturschutzbeirat-15wp.pdf | 17.06.2018 |
| Nature Conservation Advisory Board | Rosenheim | Naturschutzbeirat | https://rosenheim.de/stadt-buerger/umwelt-und-natur/naturschutz.html?no_cache=1 | 17.06.2018 |
| Nature Conservation Advisory Board | Schwabach | Naturschutzbeirat | http://schwabach.de/de/politik/beiraete/naturschutzbeirat.html | 23.06.2018 |
| Nature Conservation Advisory Board | Schweinfurt | Naturschutzbeirat | https://www.schweinfurt.de/rathaus-politik/pressestelle/buergerinformationen/3907.Naturschutzbeirat-nimmt-Arbeit-auf.html | 18.06.2018 |
| Nature Conservation Advisory Board | Solingen | Naturschutzbeirat | https://ratsportal.solingen.de/gremien/?__=UGhVM0hpd2NXNFdFcExjZRDaZMmx3tAz5VnpGTWXZ10 | 25.06.2018 |
| Nature Conservation Advisory Board | Speyer | Naturschutzbeirat | https://www.speyer.de/sv_speyer/mobile/de/Rathaus/Stadtrat/Sitzverteilung/ausschussverzeichnis_gesamt.pdf | 25.06.2018 |
| Nature Conservation Advisory Board | Suhl | Naturschutzbeirat | https://www.suhltriff.de/content/view/3156/2019/ | 18.06.2018 |
| Nature Conservation Advisory Board | Trier | Naturschutzbeirat | https://trier.de/umwelt-verkehr/naturschutz/ehrenamtlicher-naturschutz/ | 16.06.2018 |
| Nature Conservation Advisory Board | Weiden (Oberpfalz) | Naturschutzbeirat | https://www.stadtrecht.weiden.de/SANH4.pdf | 06.06.2018 |
| Nature Conservation Advisory Board | Worms | Naturschutzbeirat | https://www.worms.de/de/mein-worms/umwelt/naturschutz/Ehrenamtlicher-Naturschutz.php | 21.06.2018 |
| Nature Conservation Advisory Board | Wuppertal | Naturschutzbeirat | https://www.wuppertal.de/rathaus-buergerservice/umweltschutz/natur_landschaft/102370100000199809.php | 21.06.2018 |
| Nature Conservation Advisory Board | Zweibrücken | Naturschutzbeirat | https://www.zweibruecken.de/sv_zweibruecken/de/Leben/Stadt-Informationen/Umweltportal/?ttk0_detail=true&ttk0__0=Natur-%20und%20Landschaftsschutz&ttk0__1=Naturschutzbeirat | 12.06.2018 |
| Allotment Committee | Brandenburg | Kleingartenbeirat | https://www.stadt-brandenburg.de/rathaus/beiraete/fachbeiraete/ | 30.04.2018 |
| Allotment Committee | Chemnitz | Kleingartenbeirat | http://session-bi.stadt-chemnitz.de/kp0040.php?__kgmr=740235 | 04.05.2018 |
| Allotment Committee | Dresden | Kleingartenbeirat | https://www.dresden.de/media/pdf/satzungen/satzung_haupt.pdf | 08.07.2018 |

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|------------------------------------|---------------|---|---|------------|
| Allotment Committee | Erfurt | Kleingartenbeirat | http://www.erfurt.de/ef/de/rathaus/stadtrat/beirat/index.html | 13.06.2018 |
| Allotment Committee | Jena | Kleingartenbeirat | https://www.jena.de/fm/694/a12.pdf | 13.06.2018 |
| Allotment Committee | Karlsruhe | Kleingartenbeirat | https://web3.karlsruhe.de/Gemeinderat/ris/bi/getfile.php?id=602954&type=do&#search=%222018/0212%22 | 29.06.2018 |
| Allotment Committee | Leipzig | Kleingartenbeirat | https://www.leipzig.de/buergerservice-und-verwaltung/aemter-und-behoerdengaenge/satzungen/?tx_ewerkformsmanager_pi%5Buid%5D=421&tx_ewerkformsmanager_pi%5Baction%5D=download&tx_ewerkformsmanager_pi%5Bcontroller%5D=Statues&cHash=31886e89e96b34b873e940457b1167bd | 30.06.2018 |
| Allotment Committee | Schwerin | Stadtkleingartenbeirat | https://www.schwerin.de/export/sites/default/galleries/Dokumente/Bekanntmachungen/Bekanntmachungen-2017/Richtlinie-Stadtkleingartenbeirat.pdf | 25.06.2018 |
| Allotment Committee | Dessau-Roßlau | Kleingartenbeirat | https://verwaltung.dessau-rosslau.de/fileadmin/Verwaltungsportal_Dessau-Rosslau/Stadt_Buerger/Buergerservice/Stadtrecht/kleingartenbeirat_2013.pdf | 08.07.2018 |
| Hunting Committee | Bottrop | Jagdbeirat | http://ratsinfo.bottrop.de/buergerinfo/kp0040.asp?__kgnr=998203 | 30.04.2018 |
| Hunting Committee | Erfurt | Jagdbeirat | http://www.erfurt.de/ef/de/service/aktuelles/am/2007/101490.html | 13.06.2018 |
| Hunting Committee | Hagen | Kreisjagdbeirat | https://www.hagen.de/web/de/fachbereiche/fb_69/fb_69_10/fb_69_1001/kreisjagdbeirat.html | 11.06.2018 |
| Hunting Committee | Kiel | Jagdbeirat | https://www.kiel.de/de/politik_verwaltung/beiraete.php | 29.06.2018 |
| Environmental Protection Committee | Essen | Beirat für Umwelt- und Verbraucherschutz | https://media.essen.de/media/wwwessende/aemter/15/SR006neu.pdf | 14.06.2018 |
| Animal Protection Committee | Leipzig | Tierschutzbeirat | https://ratsinfo.leipzig.de/bi/au020.asp?AULFDNR=2297&altoption=Beirat | 30.06.2018 |
| Environmental Protection Committee | Offenbach | Kommission für Umweltschutz | https://www.offenbach.de/leben-in-of/umwelt-klimaschutz/umweltkommission.php | 27.06.2018 |
| Environmental Protection Committee | Stuttgart | Beirat für Umweltschutz | https://www.stuttgart.de/item/show/305802/1/dept/147416? | 25.06.2018 |
| One-World Committee | Düsseldorf | Eine-Welt-Beirat | http://www.eineweltforum.de/ewf_partner_ewb/ | 09.07.2018 |
| Development Cooperation Committee | Münster | Beirat für kommunale Entwicklungszusammenarbeit | https://www.stadt-muenster.de/ratsservice/politik-und-verwaltung/beirat-fuer-kommunale-entwicklungszusammenarbeit.html | 04.07.2018 |

Table 15 Analyzed committees in the category “Urban Planning”

| Type | City | Committee-name | Source | Date |
|------------------------------|----------------|---|---|------------|
| Architectural Advisory Board | Augsburg | Baukunstbeirat | https://ratsinfo.augsburg.de/bi/au010.asp?T1=Beir%E4te&AU=Beirat&SORTVON=10&SORTBIS=10 | 12.03.2018 |
| Architectural Advisory Board | Baden-Baden | Gestaltungsbeirat | https://www.baden-baden.de/buergerservice/service/dienststellen-a-z/gestaltungsbeirat/ | 12.03.2018 |
| Architectural Advisory Board | Bamberg | Gestaltungsbeirat | http://bamberg.sitzung-online.org/pi/au010.asp?T1=Aussch%FCsse&AU=Ausschuss&SORTBIS=5 | 12.03.2018 |
| Architectural Advisory Board | Bielefeld | Beirat für Stadtgestaltung | https://anwendungen.bielefeld.de/bi/kp0040.asp?__kgmr=965314& | 16.04.2018 |
| Architectural Advisory Board | Bochum | Gestaltungsbeirat | https://session.bochum.de/bi/kp0040.asp?__kgmr=978006 | 16.04.2018 |
| Architectural Advisory Board | Bonn | Städtebau- und Gestaltungsbeirat | http://www2.bonn.de/bo_ris/ris_sql/agm_index.asp?e_register=0&e_content=3502&e_gre_id=250&e_p_id=10&e_gre_art=Gremien&e_caller=hbr_gremien_result | 20.04.2018 |
| Architectural Advisory Board | Brandenburg | Beirat für Denkmalpflege und Stadtsanierung | https://www.stadt-brandenburg.de/rathaus/beiraete/fachbeiraete/ | 30.04.2018 |
| Architectural Advisory Board | Darmstadt | Gestaltungsbeirat | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Architectural Advisory Board | Dessau-Roßlau | Beirat für Stadtgestaltung | https://verwaltung.dessau-rosslau.de/fileadmin/Verwaltungsportal_Dessau-Rosslau/Stadt_Buerger/Buergerservice/Stadtrecht/stadtgestaltungssatzung_2014.pdf | 08.07.2018 |
| Architectural Advisory Board | Duisburg | Gestaltungsbeirat | https://www.waz.de/staedte/duisburg/der-beirat-fuer-stadtgestaltung-hintergrund-id7197436.html | 09.07.2018 |
| Architectural Advisory Board | Erfurt | Beirat für Baukunst und Stadtgestaltung | http://www.erfurt.de/mam/ef/rathaus/stadtrecht/6/6823.pdf | 13.06.2018 |
| Architectural Advisory Board | Erlangen | Baukunstbeirat | https://www.erlangen.de/Portaldata/1/Resources/110_stadtrecht/[2xx.xx]/_022.00__vom_27.05.2014_Baukunstbeirat.pdf | 13.06.2018 |
| Architectural Advisory Board | Freiburg | Gestaltungsbeirat | https://www.freiburg.de/pb/site/Freiburg/get/documents_E1091898795/freiburg/daten/ortsrecht/09%20Bauen%20und%20Sanieren/OrtsR_09_22.pdf | 19.06.2018 |
| Architectural Advisory Board | Fürth | Baukunstbeirat | https://www.fuerthwiki.de/wiki/index.php/Baukunstbeirat_FC3%BCrth | 06.06.2018 |
| Architectural Advisory Board | Göttingen | Städtebaubeirat | https://ratsinfo.goettingen.de/bi/___tmp/tmp/45-181-136452019756/452019756/00122405/05-Anlagen/01/Geschaeftsordnung_des_Staedtebaubeirates_der_S.pdf | 28.06.2018 |
| Architectural Advisory Board | Halle | Gestaltungsbeirat | http://www.halle.de/de/Verwaltung/Stadtentwicklung/Gestaltungsbeirat/ | 15.06.2018 |
| Architectural Advisory Board | Herne | Gestaltungsbeirat | https://www.herne.de/PDF/Wirtschaft/20170530_geschaeftsordnung_beschlussfassung.pdf | 14.06.2018 |
| Architectural Advisory Board | Ingolstadt | Gestaltungsbeirat | https://www.ingolstadt.de/media/custom/465_4967_1.PDF?1518514178 | 11.06.2018 |
| Architectural Advisory Board | Jena | Baukunstbeirat | https://www.jena.de/fm/694/g17.pdf | 13.06.2018 |
| Architectural Advisory Board | Kaiserslautern | Gestaltungsbeirat | https://www.kaiserslautern.de/mb/themen/pbw/gestaltungsbeirat/pdf/geschaeftsordnung-gestaltungsbeirat-kl_1_.pdf | 29.06.2018 |

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|------------------------------|-------------|---------------------------------|---|------------|
| Architectural Advisory Board | Karlsruhe | Gestaltungsbeirat | https://www.karlsruhe.de/b3/bauen/gestaltungsbeirat/geschaeftsordnung | 29.06.2018 |
| Architectural Advisory Board | Kassel | Beirat für Stadtgestaltung | http://www.stadt-kassel.de/politik/beiraete/gestaltbeirat/info/02861/index.html | 29.06.2018 |
| Architectural Advisory Board | Kempten | Gestaltungsbeirat | https://ratsinfo.kempten.de/bi/kp0040.php?__kgrnr=27& | 11.06.2018 |
| Architectural Advisory Board | Kiel | Beirat für Stadtgestaltung | https://www11.kiel.de/ortsrecht/root/download.php?typ=lf&fid=b2ac7e492a9ef11ea8b2fba9e01982ed | 29.06.2018 |
| Architectural Advisory Board | Cologne | Gestaltungsbeirat | https://www.stadt-koeln.de/mediaasset/content/pdf61/gesch__ftsordnung_gestaltungsbeirat.pdf | 30.06.2018 |
| Architectural Advisory Board | Krefeld | Gestaltungsbeirat | https://www.krefeld.de/C12574D40034948F/files/1.05-Geschaeftsordnung_fuer_den_Gestaltungsbeirat_der_Stadt_Krefeld.pdf/\$file/1.05-Geschaeftsordnung_fuer_den_Gestaltungsbeirat_der_Stadt_Krefeld.pdf?openElement | 13.06.2018 |
| Architectural Advisory Board | Landshut | Gestaltungsbeirat | http://www.landshut.de/fileadmin/files_stadt/downloadbereich_aemter/stadtentwicklung/gestaltung/Gestaltungsbeirat.pdf | 17.06.2018 |
| Architectural Advisory Board | Lübeck | Welterbe- und Gestaltungsbeirat | http://stadtentwicklung.luebeck.de/stadtplanung/gbr/ | 30.06.2018 |
| Architectural Advisory Board | Magdeburg | Gestaltungsbeirat | https://www.magdeburg.de/PDF/Geschäftsordnung_Gestaltungsbeirat.PDF?ObjSvrID=37&ObjID=19797&ObjLa=1&Ext=PDF&WTR=1&_ts=1493121574 | 08.07.2018 |
| Architectural Advisory Board | Mainz | Planungs- und Gestaltungsbeirat | http://mainz.de/medien/internet/downloads/PGB_2011-2017.pdf | 03.07.2018 |
| Architectural Advisory Board | Mannheim | Gestaltungsbeirat | https://www.mannheim.de/sites/default/files/page/15491/16-06-14_akt_go_gbr.pdf | 04.07.2018 |
| Architectural Advisory Board | Mülheim | Gestaltungsbeirat | https://www.muelheim-ruhr.de/cms/gestaltungsbeirat1.html | 08.07.2018 |
| Architectural Advisory Board | Munich | Kommission für Stadtgestaltung | https://www.muenchen.de/rathaus/Stadtverwaltung/Referat-fuer-Stadtplanung-und-Bauordnung/Bauaufsicht/KfS-Info/Mitglieder.html | 08.07.2018 |
| Architectural Advisory Board | Münster | Beirat für Stadtgestaltung | https://www.stadt-muenster.de/bauordnungsamt/beirat-fuer-stadtgestaltung.html | 04.07.2018 |
| Architectural Advisory Board | Nuremberg | Baukunstbeirat | https://www.nuernberg.de/imperia/md/stadtrecht/dokumente/6/610/610_056.pdf | 27.06.2018 |
| Architectural Advisory Board | Oberhausen | Gestaltungsbeirat | https://www.oberhausen.de/de/index/stadtentwicklung-umwelt/stadtentwicklung/gestaltungsbeirat/material-gestaltungsbeirat/gestaltungsbeirat-geschaeftsordnung_04-03-2015.pdf | 27.06.2018 |
| Architectural Advisory Board | Oldenburg | Gestaltungsbeirat | https://www.oldenburg.de/fileadmin/oldenburg/Benutzer/PDF/40/Gestaltungsbeirat/Geschaeftsordnung.pdf | 27.06.2018 |
| Architectural Advisory Board | Pforzheim | Gestaltungsbeirat | https://di0pda1wg490s.cloudfront.net/fileadmin/user_upload/bauen/gestaltungsbeirat/GBR/geschaeftsordnung-gbr-160817.pdf?sword_list%5B0%5D=beirat&no_cache=1 | 12.06.2018 |
| Architectural Advisory Board | Rostock | Gestaltungsbeirat | http://rathaus.rostock.de/sixcms/media.php/1598/Gesch%C3%A4ftsordnung_Gestaltungsbeirat%202017.pdf | 18.06.2018 |
| Architectural Advisory Board | Saarbrücken | Gestaltungsbeirat | http://buergerinfor.saarbruecken.de/getfile.asp?id=118989&type=do& | 22.06.2018 |
| Architectural Advisory Board | Schwerin | Gestaltungsbeirat | https://bis.schwerin.de/getfile.asp?id=147695&type=do | 25.06.2018 |

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| Architectural Advisory Board | Stuttgart | Gestaltungsbeirat | https://www.stuttgart.de/img/mdb/item/613569/121520.pdf | 25.06.2018 |
| Architectural Advisory Board | Weimar | Beirat für Baukultur | https://stadt.weimar.de/fileadmin/redaktion/Dokumente/buergerservices/ortsrecht/bauwesen/60_2_SatzungBeiratBaukultur.pdf | 19.06.2018 |
| Architectural Advisory Board | Wiesbaden | Gestaltungs- und Denkmalbeirat | http://www.wiesbaden.de/medien-zentral/dok/rathaus/stadtrecht/1_-_3.4_Gestaltungsbeiratsordnung_Stand_2017_.pdf | 20.06.2018 |
| Architectural Advisory Board | Würzburg | Stadtbildkommission | https://www.wuerzburg.de/media/www.wuerzburg.de/org/med_9025/10802_6.1.9_stadtbildkommission.pdf | 21.06.2018 |
| Architectural Advisory Board | Wuppertal | Gestaltungsbeirat | https://www.wuppertal.de/wirtschaft-stadtentwicklung/medien/dokumente/Seite1-2.pdf | 21.06.2018 |
| Monument Preservation Committee | Darmstadt | Denkmalbeirat | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Monument Preservation Committee | Frankfurt (Oder) | Denkmalbeirat | https://www.frankfurt-oder.de/?object=tx%7c2616.14&ModID=255&FID=2616.4155.1 | 19.06.2018 |
| Monument Preservation Committee | Kassel | Denkmalbeirat | http://www.serviceportal-kassel.de/cms05/satzungen/067408/index.html | 29.06.2018 |
| Monument Preservation Committee | Koblenz | Denkmalpflegebeirat | https://www.koblenz.de/r30/vc_content/bilder/firma25/k10_4_219_statut_des_denkmalpflegebeirates.pdf | 30.06.2018 |
| Monument Preservation Committee | Krefeld | Denkmalausschuss | https://www.krefeld.de/c12574d40034948f/files/6.90-satzung_ueber_die_bildung_und_den_aufgabenbereich_des_denkmalausschusses.pdf/\$file/6.90-satzung_ueber_die_bildung_und_den_aufgabenbereich_des_denkmalausschusses.pdf?openelement | 13.06.2018 |
| Monument Preservation Committee | Trier | Denkmalpflegebeirat | https://www.trier.de/Bauen-Wohnen/Denkmalpflege/Denkmalpflegebeirat/ | 16.06.2018 |
| Urban Development Committee | Bayreuth | Stadtentwicklungskommission Bayreuth 2020 | https://www.bayreuth.de/rathaus-buergerservice/stadtverwaltung/ob-stadtrat-gremien/kommissionen-des-stadtrats-bayreuth/ | 22.03.2018 |
| Street Naming Committee | Darmstadt | Beirat für Straßenbenennung | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Housing Committee | Dresden | Wohnbeirat | https://www.dresden.de/media/pdf/satzungen/satzung_haupt.pdf | 08.07.2018 |
| Healthy Cities Committee | Dresden | Beirat Gesunde Städte | https://www.dresden.de/media/pdf/satzungen/satzung_haupt.pdf | 08.07.2018 |
| Environment, Mobility and Planning Committee | Erlangen | Umwelt-, Verkehrs- und Planungsbeirat | https://www.erlangen.de/Portaldata/1/Resources/110_stadtrecht/[2xx.xx]/235.00_i.d.F._vom_24.10.2014__Umwelt-_Verkehrs-_und_Planungsbeirat.pdf | 13.06.2018 |
| Urban Development Committee | Kassel | Bau- und Planungskommission | http://www.stadt-kassel.de/politik/kommissionen/planung/ | 29.06.2018 |
| Urban Development Committee | Kiel | Siedlerbeirat | https://www11.kiel.de/ortsrecht/root/download.php?typ=lf&fid=caac39920287a972dff0f9b07ebb481d | 29.06.2018 |
| Urban Development Committee | Regensburg | Stadtentwicklungsforum | https://www.regensburg.de/stadtrecht/233907/geschaeftsordnung-fuer-das-stadtentwicklungsforum-der-stadt-regensburg-vom-24-juli-1997.html | 16.06.2018 |
| Urban Development Committee | Saarbrücken | Städtebaubeirat | http://www.saarbruecken.de/media/download-5548876eb526a | 22.06.2018 |
| Urban Development Committee | Stuttgart | Städtebauausschuss | https://www.stuttgart.de/item/show/305802/1/dept/112955? | 25.06.2018 |
| Urban Development Committee | Wilhelms-haven | Beirat für Stadtentwicklung | https://www.wilhelmshaven.de/stepplus/media/Geschaeftsordnung_Beirat_fuer_Stadtentwicklung.pdf | 20.06.2018 |

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|-------------------------|----------|---------------------------------------|---|------------|
| Housing Committee | Munich | Mieterbeirat | https://www.muenchen.de/rathaus/Stadtrecht/vorschrift/24.pdf | 08.07.2018 |
| Street Naming Committee | Hannover | Beirat Namensgebende Persönlichkeiten | https://www.hannover.de/content/download/564533/12940073/file/Beiratsempfehlungen+Presse+01.10.2015+.pdf | 15.06.2018 |

Table 16 Analyzed committees in the category “Mobility”

| Type | City | Committee name | Source | Date |
|----------------------------------|------------------|--|---|------------|
| Cycling and Pedestrian Committee | Bayreuth | Kommission für Rad- und Fußwegeplanung | https://www.bayreuth.de/rathaus-buergerservice/stadtverwaltung/ob-stadtrat-gremien/kommissionen-des-stadtrats-bayreuth/ | 22.03.2018 |
| Cycling Committee | Bamberg | Fahrradforum | http://bamberg.sitzung-online.org/pi/au010.asp?T1=Aussch%FCsse&AU=Ausschuss&SORTBIS=5 | 12.03.2018 |
| Cycling Committee | Halle | Runder Tisch Radverkehr | http://www.halle.de/de/Verwaltung/Stadtentwicklung/Verkehr/Planung/Radverkehr/Runder-Tisch-Radverkehr/ | 15.06.2018 |
| Cycling Committee | Jena | Beirat Radverkehr | https://www.jena.de/fm/694/i09.pdf | 13.06.2018 |
| Cycling Committee | Karlsruhe | Radlerforum | https://www.karlsruhe.de/b3/verkehr/radverkehr/radlerforum.de | 29.06.2018 |
| Cycling Committee | Rostock | Fahrradforum | https://ksd.rostock.de/bi/___tmp/tmp/45081036964526466/964526466/01346783/83-Anlagen/01/Geschaeftsordnung_FF_Endfassung_2017-08-16.pdf | 18.06.2018 |
| Cycling Committee | Trier | Arbeitskreis Radverkehr | https://trier.de/umwelt-verkehr/radverkehr/arbeitskreis-radverkehr/ | 16.06.2018 |
| Cycling Committee | Würzburg | Radverkehrsbeirat | https://www.wuerzburg.de/media/www.wuerzburg.de/org/med_9025/42282_6.1.16radverkehrsbeirat0311internet.pdf | 21.06.2018 |
| Motor Vehicle Committee | Jena | Beirat Kfz-Verkehr | https://www.jena.de/fm/694/i08.pdf | 13.06.2018 |
| Parking Committee | Darmstadt | Parkbeirat | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Passengers' Committee | Frankfurt (Main) | Fahrgastbeirat | http://www.traffiq.de/1487.de.fahrgastbeirat.html#a1783 | 19.06.2018 |
| Passengers' Committee | Göttingen | Fahrgastbeirat | https://www.goettingen.de/rathaus/politik/beiraete.html | 28.06.2018 |
| Passengers' Committee | Solingen | ÖPNV-Fahrgastbeirat | https://www.solingen.de/ris/inhalt/oepnv-fahrgastbeirat-4209663/ | 25.06.2018 |
| Passengers' Committee | Worms | Fahrgastbeirat | https://www.worms.de/de-wAssets/docs/rathaus/fahrgastbeirat/150520_GO-unterschrieben.pdf | 21.06.2018 |
| Urban Traffic Committee | Darmstadt | Runder Tisch Nahmobilität | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Urban Traffic Committee | Heilbronn | Verkehrsbeirat | https://www.heilbronn.de/fileadmin/daten/stadtheilbronn/formulare/buerger_rathaus/stadtrecht/Stadtrecht-Startseite.pdf | 11.06.2018 |
| Urban Traffic Committee | Offenbach | Verkehrskommission | https://www.offenbach.de/medien/bindata/of/stadtrecht-allgemeinerverwaltung/1.031_Kommissionsordnung_in_der_Fassung_vom_07.06.2017.pdf | 27.06.2018 |
| Urban Traffic Committee | Hof | Verkehrsbeirat | https://www.stadt-hof.org/session/bi/kp0040.php?__kgmr=12 | 25.08.2018 |

Table 17 Analyzed committees in the category “Participation”

| Type | City | Committee name | Source | Date |
|----------------------------|---------------|-----------------------------------|---|------------|
| Migration Advisory Council | Ansbach | Integrationsbeirat | https://www.ansbach.de/Bürger/Familie-Soziales/Integration/Integrationsbeirat?&La=1 | 09.03.2018 |
| Migration Advisory Council | Augsburg | Integrationsbeirat | https://ratsinfo.augsburg.de/bi/au010.asp?T1=Beir%E4te&AU=Beirat&SORTVON=10&SORTBIS=14 | 12.03.2018 |
| Migration Advisory Council | Bayreuth | Integrationsbeirat | https://www.bayreuth.de/rathaus-buergerservice/stadtverwaltung/ob-stadtrat-gremien/beiraete-der-stadt-bayreuth/ | 22.03.2018 |
| Migration Advisory Council | Bielefeld | Integrationsrat | https://anwendungen.bielefeld.de/bi/kp0040.asp?__kgmr=994832& | 16.04.2018 |
| Migration Advisory Council | Bochum | Integrationsrat | https://session.bochum.de/bi/kp0040.asp?__kgmr=978026& | 16.04.2018 |
| Migration Advisory Council | Bonn | Integrationsrat | https://www.integration-in-bonn.de/integrationsrat.html | 20.04.2018 |
| Migration Advisory Council | Bottrop | Integrationsrat | http://ratsinfo.bottrop.de/buergerinfo/kp0040.asp?__kgmr=631617& | 30.04.2018 |
| Migration Advisory Council | Brandenburg | Integrationsbeirat | https://www.stadt-brandenburg.de/rathaus/beiraete/fachbeiraete/ | 30.04.2018 |
| Migration Advisory Council | Chemnitz | Migrationsbeirat | http://session-bi.stadt-chemnitz.de/kp0040.php?__kgmr=5000031 | 04.05.2018 |
| Migration Advisory Council | Darmstadt | Ausländerbeirat | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Migration Advisory Council | Delmenhorst | Integrationsbeirat | http://www.sitzungsdienst-delmenhorst.de/bi/au010.asp?T1=Beir%E4te&AU=Beir%E4te&SORTVON=501&SORTBIS=510&SELECT=1 | 22.05.2018 |
| Migration Advisory Council | Dessau-Roßlau | Integrationsbeirat | https://verwaltung.dessau-rosslau.de/fileadmin/Verwaltungsportal_Dessau-Rosslau/Stadt_Buerger/Buergerservice/Stadtrecht/ibr.pdf | 08.07.2018 |
| Migration Advisory Council | Dortmund | Integrationsrat | https://www.dortmund.de/de/leben_in_dortmund/internationales/integrationsrat/start_ir/index.html | 24.05.2018 |
| Migration Advisory Council | Dresden | Integrations- und Ausländerbeirat | https://www.dresden.de/media/pdf/satzungen/satzung_haupt.pdf | 08.07.2018 |
| Migration Advisory Council | Düsseldorf | Integrationsrat | https://www.duesseldorf.de/stadtrecht/5/50/50301-geschaeftsordnung-des-integrationsrates-der-landeshauptstadt-duesseldorf.html | 09.07.2018 |
| Migration Advisory Council | Duisburg | Integrationsrat | https://duisburg.de/rathaus/rathausundpolitik/ortsrecht/S10.01_Hauptsatzung_30.11.2017.pdf | 09.07.2018 |
| Migration Advisory Council | Eisenach | Ausländerbeirat | https://www.eisenach.de/rathaus/stadtrat-gremien/naturschutzbeirat/auslaenderbeirat/ | 07.06.2018 |
| Migration Advisory Council | Emden | Integrationsrat | https://www.emden.de/fileadmin/media/stadtemden/PDF/Verwaltung/Ortsrecht/50_1_satzung_integrationsrat.pdf | 06.06.2018 |
| Migration Advisory Council | Erfurt | Ausländerbeirat | http://www.erfurt.de/mam/ef/service/mediathek/publikationen/2010/satzung_auslaenderbeirat_und_wahlordnung.pdf | 13.06.2018 |
| Migration Advisory Council | Erlangen | Ausländer- und Integrationsbeirat | https://www.erlangen.de/Portaldata/1/Resources/110_stadtrecht/[0xx.xx]/_014.00__i.d.F._vom_12.02.2014_Satzung__Auslaender-_und_Integrationsbeirat.pdf | 13.06.2018 |

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|----------------------------|---------------------|--|---|------------|
| Migration Advisory Council | Essen | Integrationsrat | https://media.essen.de/media/wwwessende/aemter/15/SR001neu.pdf | 14.06.2018 |
| Migration Advisory Council | Frankenthal (Pfalz) | Beirat für Migration und Integration | http://www.frankenthal.de/sv_frankenthal/de/Homepage/Stadt%20und%20Bürger/Verwaltung/Ortsrecht/1-10%20Integrationsatzung.pdf | 06.06.2018 |
| Migration Advisory Council | Frankfurt (Oder) | Integrationsbeirat | https://www.frankfurt-oder.de/PDF/Hauptsatzung_2_%C3%84nderung.PDF?ObjSvriD=2616&ObjID=2417&ObjLa=1&Ext=PDF&WTR=1&_ts=1476277094 | 19.06.2018 |
| Migration Advisory Council | Frankfurt (Main) | Ausländerbeirat | https://frankfurt.de/sixcms/media.php/738/Hauptsatzung%20%28Stand%2004.05.2016%29.pdf | 19.06.2018 |
| Migration Advisory Council | Freiburg | Migrantenbeirat | https://www.freiburg.de/pb/site/Freiburg/get/documents_E-1088933868/freiburg/daten/ortsrecht/01%20Gemeinderat/OrtsR_01_05.pdf | 19.06.2018 |
| Migration Advisory Council | Fürth | Integrationsbeirat | https://www.fuerth.de/Portaldata/1/Resources/FuertherRathaus/Ortsrecht/10_7_satzung_der_stadt_fuerth_fuer_den_integrationsbeirat.pdf | 06.06.2018 |
| Migration Advisory Council | Gelsenkirchen | Integrationsrat | https://www.gelsenkirchen.de/de/rathaus/informationen/verordnungen_und_satzungen/_doc/Haupt_und_Bezirksatzung.pdf | 28.06.2018 |
| Migration Advisory Council | Göttingen | Integrationsrat | https://www.goettingen.de/pics/download/1_1484235279/4-5_-_WAHLORDNUNG_INTEGRATIONSRAT.pdf | 28.06.2018 |
| Migration Advisory Council | Hagen | Integrationsrat | siehe Dokument | 11.06.2018 |
| Migration Advisory Council | Halle | Ausländerbeirat | http://www.halle.de/Publications/7333/sr_109-0_ausl_nderbeirates_der_stadt_halle__saale_.pdf | 15.06.2018 |
| Migration Advisory Council | Hamm | Integrationsrat | https://www.hamm.de/rathaus/ortsrecht/detail.html?tx_cqlocationlaw_ordinance%5Bordinance%5D=156&tx_cqlocationlaw_ordinance%5Baction%5D=ordinancedetail&tx_cqlocationlaw_ordinance%5Bcontroller%5D=Ordinance&cHash=619afce3c318deef0e85f81be715d822 | 06.06.2018 |
| Migration Advisory Council | Hannover | Integrationsbeiräte | https://e-government.hannover-stadt.de/lhhSIMwebdd.nsf/D3E597FF6A58B845C12574F0002E299C/\$FILE/Druckversion.pdf | 15.06.2018 |
| Migration Advisory Council | Heidelberg | Ausländerrat / Migrationsrat | https://www.heidelberg.de/site/Heidelberg_ROOT/get/documents_E-1912036161/heidelberg/Objektdatenbank/30/PDF/30_pdf_ortsr_1-2-4_AMR_Satzung.pdf | 11.06.2018 |
| Migration Advisory Council | Heilbronn | Beirat für Partizipation und Integration | https://www.heilbronn.de/fileadmin/daten/stadtheilbronn/formulare/buerger_rathaus/stadtrecht/Stadtrecht-Startseite.pdf | 11.06.2018 |
| Migration Advisory Council | Herne | Integrationsrat | https://www.herne.de/Stadt-und-Leben/Integration/Der-Integrationsrat-der-Stadt-Herne/ | 14.06.2018 |
| Migration Advisory Council | Ingolstadt | Migrationsrat | https://www.ingolstadt.de/media/custom/465_1119_1.PDF?1518514158 | 11.06.2018 |
| Migration Advisory Council | Jena | Migrationsbeirat | https://www.jena.de/fm/694/a01.pdf | 13.06.2018 |
| Migration Advisory Council | Kaiserslautern | Beirat für Migration und Integration | https://kaiserslautern.de/mb/themen/stadtverwaltung/ortsrecht/pdf/1_6_migrationsbeiratssatzung.pdf | 29.06.2018 |
| Migration Advisory Council | Karlsruhe | Migrationsbeirat | https://web1.karlsruhe.de/Stadt/Stadtrecht/s-0-11.php | 29.06.2018 |
| Migration Advisory Council | Kassel | Ausländerbeirat | http://www.serviceportal-kassel.de/cms05/satzungen/067041/index.html | 29.06.2018 |
| Migration Advisory Council | Kaufbeuren | Integrationsbeirat | https://www.kaufbeuren.de/Portaldata/17/Resources/Rathaus/Ortsrecht/102_Geschaeftsordnung_Integrationsbeirat.pdf | 11.06.2018 |

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|----------------------------|-----------------------|--------------------------------------|---|------------|
| Migration Advisory Council | Kempten | Integrationsbeirat | https://ratsinfo.kempten.de/bi/kp0040.php?__kgrnr=21& | 11.06.2018 |
| Migration Advisory Council | Kiel | Forum für Migrantinnen und Migranten | https://www11.kiel.de/ortsrecht/root/download.php?typ=lf&fid=c52981ea5d78a24a05a214f01d78d2f5 | 29.06.2018 |
| Migration Advisory Council | Koblenz | Beirat für Migration und Integration | https://www.koblenz.de/r30/vc_content/bilder/firma25/k10_4_213_satzung_beirat_migration_und_integration.pdf | 30.06.2018 |
| Migration Advisory Council | Cologne | Integrationsrat | https://www.stadt-koeln.de/leben-in-koeln/soziales/integrationsrat/selbstverstaendnis-des-integrationsrats-koeln | 30.06.2018 |
| Migration Advisory Council | Krefeld | Integrationsrat | https://www.krefeld.de/c12574d40034948f/files/1.07-geschaeftsordnung_integrationsrat.pdf/\$file/1.07-geschaeftsordnung_integrationsrat.pdf?openelement | 13.06.2018 |
| Migration Advisory Council | Landau (Pfalz) | Beirat für Migration und Integration | https://www.landau.de/media/custom/1815_4031_1.PDF?1475573862 | 14.06.2018 |
| Migration Advisory Council | Landshut | Migrationsbeirat | http://www.landshut.de/fileadmin/files_stadt/downloadbereich_aemter/migrationsbeirat/satzung_migla.pdf | 06.06.2018 |
| Migration Advisory Council | Leipzig | Migrantenbeirat | https://www.leipzig.de/fileadmin/mediendatenbank/leipzig-de/Stadt/02.1_Dez1_Allgemeine_Verwaltung/18_Ref_Migration_und_Integration/Migrantenbeirat/Flyer_Migrantenbeirat_Stadt_Leipzig.pdf | 30.06.2018 |
| Migration Advisory Council | Leverkusen | Integrationsrat | http://ris.leverkusen.de/kp0040.asp?_kgrnr=21& | 30.06.2018 |
| Migration Advisory Council | Ludwigshafen | Migrationsbeirat | http://www.ludwigshafen.de/fileadmin/Websites/Stadt_Ludwigshafen/Buergernah/Rathaus/Ortsrecht/3-04.pdf | 07.07.2018 |
| Migration Advisory Council | Magdeburg | Migrationsbeirat | https://www.magdeburg.de/PDF/Amtsblatt_21_2014_Migration.PDF?ObjSvriD=37&ObjID=12936&ObjLa=1&Ext=PDF&WTR=1&_ts=1403246088 | 08.07.2018 |
| Migration Advisory Council | Mainz | Beirat für Migration und Integration | http://www.mainz.de/verwaltung-und-politik/beiraete-beauftragte/beirat-fuer-migration-und-integration.php | 03.07.2018 |
| Migration Advisory Council | Mannheim | Migrationsbeirat | https://www.mannheim.de/sites/default/files/page/2826/vorlage_zur_neubesetzung_des_migrationsbeirates_v608_2014_.pdf | 04.07.2018 |
| Migration Advisory Council | Memmingen | Ausländerbeirat | https://stadtrecht.memmingen.de/fileadmin/Stadtrecht/MStR/0000/0200.pdf | 04.07.2018 |
| Migration Advisory Council | Mönchengladbach | Integrationsrat | https://www.moenchengladbach.de/fileadmin/news_import/Ortsrecht-Satzungen/10-1_01_2018.pdf | 04.07.2018 |
| Migration Advisory Council | Mülheim | Integrationsrat | https://www.muelheim-ruhr.de/cms/gemeindeordnung_thema_auslaenderbeiraete1.html | 08.07.2018 |
| Migration Advisory Council | Munich | Migrationsbeirat | https://www.muenchen.de/rathaus/Stadtrecht/vorschrift/22.pdf | 08.07.2018 |
| Migration Advisory Council | Münster | Integrationsrat | https://www.stadt-muenster.de/recht/ortsrecht/satzungen/detailansicht/satzungsnummer/1001.html | 04.07.2018 |
| Migration Advisory Council | Neustadt (Weinstraße) | Beirat für Migration und Integration | https://www.neustadt.eu/output/download.php?fid=2579.47.1..PDF&fn=0_8_Migration_&_Integration | 28.06.2018 |
| Migration Advisory Council | Nuremberg | Integrationsrat | https://www.nuernberg.de/imperia/md/stadtrecht/dokumente/0/001/001_352neu.pdf | 27.06.2018 |
| Migration Advisory Council | Oberhausen | Integrationsrat | http://www8.oberhausen.de/Ortsrecht_Internet/pdf-dokumente/140320_Wahlordnung_Integrationsrat_mit_Anlage.pdf | 27.06.2018 |

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|----------------------------|---------------------|--------------------------------------|---|------------|
| Migration Advisory Council | Offenbach | Ausländerbeirat | https://www.offenbach.de/medien/bindata/of/stadtrecht-allgemeine-verwaltung/1.035_Geschaeftsordnung_des_Auslaenderbeitrates.pdf | 27.06.2018 |
| Migration Advisory Council | Osnabrück | Migrationsbeirat | https://www.osnabrueck.de/fileadmin/user_upload/OR_I8.pdf | 27.06.2018 |
| Migration Advisory Council | Pirmasens | Migrationsbeirat | http://www.pirmasens.de/dante-cms/app_data/adam/repo/tempmedia/1528789854.XDWFVTBLMUSQHNXVMLFDVWXWYJDDKCR/41791_Beirat_fr_Migration_und_Integration.pdf | 12.06.2018 |
| Migration Advisory Council | Potsdam | Migrantenbeirat | https://www.potsdam.de/sites/default/files/documents/hauptsatzung_2015_aenderungssatzung2_von_2017.pdf | 12.06.2018 |
| Migration Advisory Council | Regensburg | Integrationsbeirat | https://www.regensburg.de/sixcms/media.php/140/1.3520852.pdf | 16.06.2018 |
| Migration Advisory Council | Remscheid | Integrationsrat | https://www.remscheid.de/rathaus-und-politik/medienpool/ortsrecht/0.03_103_Geschaeftsordnung_IR.pdf | 17.06.2018 |
| Migration Advisory Council | Rostock | Migrantenrat | http://rathaus.rostock.de/sixcms/media.php/974/1_06.pdf | 18.06.2018 |
| Migration Advisory Council | Saarbrücken | Integrationsbeirat | http://www.saarbruecken.de/media/download-532aef785cbbc | 22.06.2018 |
| Migration Advisory Council | Schwabach | Integrationsrat | http://www.schwabach.de/images/referate/referat_2/ortsrecht/2015_IntegrationsratS.pdf | 23.06.2018 |
| Migration Advisory Council | Schweinfurt | Integrationsbeirat | https://schweinfurt.de/m_20029 | 18.06.2018 |
| Migration Advisory Council | Solingen | Integrationsrat | https://ratsportal.solingen.de/gremien/?__=UGhVM0hpd2NXNFdFcExjZfqNZKOH1d0czzPxdrAtU | 25.06.2018 |
| Migration Advisory Council | Speyer | Integrationsbeirat | https://www.speyer.de/sv_speyer/de/Rathaus/Verwaltung/Ortsrechtssammlung/1.1.4_beirat_migration+integration_2014.pdf | 25.06.2018 |
| Migration Advisory Council | Straubing | Migrationsbeirat | http://straubing.de/de/buerger-und-soziales/rathaus/beiraete/migrationsbeirat.php | 06.06.2018 |
| Migration Advisory Council | Trier | Beirat für Migration und Integration | https://trier.de/File/beirates-migration-und-integration-satzung.pdf | 16.06.2018 |
| Migration Advisory Council | Weiden (Oberpfalz). | Integrationsbeirat | https://www.stadtrecht.weiden.de/SANH6.pdf | 06.06.2018 |
| Migration Advisory Council | Weimar | Ausländerbeirat | https://stadt.weimar.de/fileadmin/redaktion/Dokumente/buergerservices/ortsrecht/allgemeine_verwaltung/10_1_Hauptsatzung_Teil_2_i.d.F.5.AE.20.09.10.pdf | 19.06.2018 |
| Migration Advisory Council | Wiesbaden | Ausländerbeirat | http://www.wiesbaden.de/medien-zentral/dok/rathaus/stadtrecht/Geschaeftsordnung_fuer_den_Auslaenderbeirat_Wiesbaden.pdf | 20.06.2018 |
| Migration Advisory Council | Worms | Integrationsbeirat | https://www.worms.de/de-wAssets/docs/rathaus/ortsrecht_satzungen/4031_Migrations-undIntegrationsbeiratssatzung.pdf | 21.06.2018 |
| Migration Advisory Council | Würzburg | Ausländer- und Integrationsbeirat | https://www.wuerzburg.de/m_10766_dl | 21.06.2018 |
| Migration Advisory Council | Wuppertal | Integrationsbeirat | https://www.wuppertal.de/rathaus-buergerservice/verwaltung/politik/stadtrecht-dokumente/0-21.pdf | 21.06.2018 |
| Migration Advisory Council | Zweibrücken | Beirat für Migration und Integration | https://www.zweibruecken.de/sv_zweibruecken/de/Rathaus/Stadtverwaltung/Ortsrechtsammlung/Satzung%201.4%20%C3%BCber%20die%20Einrichtung%20eines%20Beirates%20f%C3%BCr%20Migration%20und%20Integration.pdf | 12.06.2018 |

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|---|---------------------|---------------------------------------|---|------------|
| Advisory Council for People with Disabilities | Ansbach | Behindertenbeirat | https://www.ansbach.de/Bürger/Familie-Soziales/Inklusion/Behindertenbeirat?&La=1 | 09.03.2018 |
| Advisory Council for People with Disabilities | Augsburg | Behindertenbeirat | https://www.augsburg.de/buergerservice-rathaus/rathaus/beiraete/behindertenbeirat/ | 12.03.2018 |
| Advisory Council for People with Disabilities | Bamberg | Behindertenbeirat | http://bamberg.sitzung-online.org/pi/au010.asp?T1=Aussch%FCsse&AU=Ausschuss&SORTBIS=5 | 12.03.2018 |
| Advisory Council for People with Disabilities | Bayreuth | Behindertenbeirat | https://www.bayreuth.de/rathaus-buergerservice/stadtverwaltung/ob-stadtrat-gremien/beiraete-der-stadt-bayreuth/ | 22.03.2018 |
| Advisory Council for People with Disabilities | Bielefeld | Beirat für Behindertenfragen | https://anwendungen.bielefeld.de/bi/kp0040.asp?__kgmr=523687& | 16.04.2018 |
| Advisory Council for People with Disabilities | Bottrop | Behindertenbeirat | http://ratsinfo.bottrop.de/buergerinfo/kp0040.asp?__kgmr=766344& | 30.04.2018 |
| Advisory Council for People with Disabilities | Brandenburg | Behindertenbeirat | https://www.stadt-brandenburg.de/rathaus/beiraete/fachbeiraete/ | 30.04.2018 |
| Advisory Council for People with Disabilities | Braunschweig | Behindertenbeirat | https://www.braunschweig.de/leben/soziales/behindertenbeirat/Behindertenbeirat.php | 04.05.2018 |
| Advisory Council for People with Disabilities | Chemnitz | Behindertenbeirat | http://session-bi.stadt-chemnitz.de/kp0040.php?__kgmr=766344& | 04.05.2018 |
| Advisory Council for People with Disabilities | Cottbus | Behindertenbeirat | https://www.cottbus.de/ehrenamt/behindertenbeirat/index.html | 04.05.2018 |
| Advisory Council for People with Disabilities | Delmenhorst | Behindertenbeirat | http://www.sitzungsdienst-delmenhorst.de/bi/au010.asp?T1=Beir%E4te&AU=Beir%E4te&SORTVON=501&SORTBIS=510&SELECT=1 | 22.05.2018 |
| Advisory Council for People with Disabilities | Dessau-Roßlau | Behindertenbeirat | https://verwaltung.dessau-rosslau.de/fileadmin/Verwaltungsportal_Dessau-Rosslau/Stadt_Buerger/Buergerservice/Stadtrecht/satzung_behindertenbeirat_2014.pdf | 08.07.2018 |
| Advisory Council for People with Disabilities | Dortmund | Behindertenpolitisches Netzwerk | https://www.dortmund.de/de/rathaus_und_buergerservice/lokalpolitik/rat_und_ausschuesse/beiraete/behinderten-politisches_netzwerk/start_bpn/index.html | 24.05.2018 |
| Advisory Council for People with Disabilities | Dresden | Beirat für Menschen mit Behinderungen | https://www.dresden.de/media/pdf/satzungen/satzung_haupt.pdf | 08.07.2018 |
| Advisory Council for People with Disabilities | Düsseldorf | Behindertenbeirat | https://www.duesseldorf.de/stadtrecht/5/50/50-300.html | 09.07.2018 |
| Advisory Council for People with Disabilities | Duisburg | Beirat für Menschen mit Behinderungen | https://sessionnet.krz.de/duisburg/bi/kp0040.asp?__kgmr=40& | 09.07.2018 |
| Advisory Council for People with Disabilities | Erfurt | Behindertenbeirat | http://www.erfurt.de/mam/ef/rathaus/stadtrecht/5/5065.pdf | 13.06.2018 |
| Advisory Council for People with Disabilities | Frankenthal (Pfalz) | Behindertenbeirat | http://www.frankenthal.de/sv_frankenthal/de/Homepage/Stadt%20und%20Bürger/Verwaltung/Ortsrecht/1-13%20Satzung%20für%20den%20Beirat%20der%20Menschen%20mit%20Behinderung.pdf | 06.06.2018 |
| Advisory Council for People with Disabilities | Freiburg | Behindertenbeirat | https://www.freiburg.de/pb/site/Freiburg/get/documents_E-1983390173/freiburg/daten/ortsrecht/01%20Gemeinderat/OrtsR_01_07.pdf | 19.06.2018 |
| Advisory Council for People with Disabilities | Fürth | Behindertenbeirat | https://www.fuerth.de/desktopdefault.aspx/tabid-39/287_read-23773/ | 06.06.2018 |
| Advisory Council for People with Disabilities | Gelsenkirchen | Behindertenbeirat | https://ratsinfo.gelsenkirchen.de/ratsinfo/gelsenkirchen/Committee.html?orgid=81&o=1&oc=1&ob=1#current | 28.06.2018 |

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| Advisory Council for People with Disabilities | Göttingen | Behindertenbeirat | https://www.goettingen.de/pics/download/1_1484235235/4-7-SATZUNG_DES_BEIRATS_FUEr_MENSCHEN_MIT_BEHINDERUNGEN_DER_STDT_GOeTTINGEN.pdf | 28.06.2018 |
| Advisory Council for People with Disabilities | Hagen | Behindertenbeirat | https://www.hagen.de/ngproxy/87b9cddb906c191f722de9bd959fad29211c985 | 11.06.2018 |
| Advisory Council for People with Disabilities | Hamm | Behindertenbeirat | https://www.hamm.de/soziales-und-gesellschaft/behinderung/behindertenbeirat/richtlinien-des-behindertenbeirates.html | 06.06.2018 |
| Advisory Council for People with Disabilities | Heidelberg | Behindertenbeirat | https://www.heidelberg.de/site/Heidelberg_ROOT/get/documents_E507619255/heidelberg/Objektdatenbank/30/PDF/30_pdf_ortsr_1-2-10_Geschaeftsordnung_bmb.pdf | 11.06.2018 |
| Advisory Council for People with Disabilities | Heilbronn | Inklusionsbeirat | https://www.heilbronn.de/familie-gesellschaft/barrierefreiheit-inklusion/inklusionsbeirat.html | 11.06.2018 |
| Advisory Council for People with Disabilities | Herne | Behindertenbeirat | https://www.herne.de/Stadt-und-Leben/Menschen-mit-Behinderung/Beirat-f%C3%BCr-Belange-von-Menschen-mit-Behinderungen/ | 14.06.2018 |
| Advisory Council for People with Disabilities | Jena | Behindertenbeirat | https://www.jena.de/fm/694/e07.pdf | 13.06.2018 |
| Advisory Council for People with Disabilities | Karlsruhe | Behindertenbeirat | https://www.karlsruhe.de/b3/soziales/personengruppen/behinderte/interessenvertretung/behindertenbeirat/wahlor-dnung_leitfaden/HF_sections/content/ZZI34ruz6kLQq/ZZI34rXdBhilCF/Leitfaden_Behindertenbeirat.pdf | 29.06.2018 |
| Advisory Council for People with Disabilities | Kassel | Behindertenbeirat | http://www.serviceportal-kassel.de/cms05/satzungen/067045/index.html | 29.06.2018 |
| Advisory Council for People with Disabilities | Kaufbeuren | Behindertenbeirat | https://www.kaufbeuren.de/desktopdefault.aspx/tabid-1929/2762_read-18296/ | 11.06.2018 |
| Advisory Council for People with Disabilities | Kempten | Behindertenbeirat | https://ratsinfo.kempten.de/bi/kp0040.php?__kgrrn=8& | 11.06.2018 |
| Advisory Council for People with Disabilities | Kiel | Behindertenbeirat | https://www11.kiel.de/ortsrecht/root/download.php?typ=lf&fid=7538408baa73b5fc3a71deb120bbaba6 | 29.06.2018 |
| Advisory Council for People with Disabilities | Cologne | Stadtarbeitsgemeinschaft Behindertenpolitik | https://www.stadt-koeln.de/politik-und-verwaltung/ausschuesse-und-gremien/geschaeftsordnung-fuer-die-stadtarbeitsgemeinschaft-behinder | 30.06.2018 |
| Advisory Council for People with Disabilities | Landau (Pfalz) | Behindertenbeirat | https://www.landau.de/media/custom/1815_4241_1.PDF?1467966913 | 14.06.2018 |
| Advisory Council for People with Disabilities | Landshut | Behindertenbeirat | http://www.landshut.de/fileadmin/files_stadt/downloadbereich_aemter/rechtsamt/ortsrecht/04_Sozialverwaltung_Jugendhilfe/Behindertenbeiratssatzung.pdf | 06.06.2018 |
| Advisory Council for People with Disabilities | Leipzig | Behindertenbeirat | https://www.leipzig.de/buergerservice-und-verwaltung/stadtrat/fachbeiraete/behindertenbeirat/ | 30.06.2018 |
| Advisory Council for People with Disabilities | Leverkusen | Behindertenbeirat | https://www.leverkusen.de/leben-in-lev/gesellschaft-soziales/beirat-menschen-mit-behinderung.php | 30.06.2018 |
| Advisory Council for People with Disabilities | Ludwigshafen | Behindertenbeirat | http://www.ludwigshafen.de/fileadmin/Websites/Stadt_Ludwigshafen/Buergernah/Rathaus/Ortsrecht/4-07_.pdf | 07.07.2018 |
| Advisory Council for People with Disabilities | Mainz | Behindertenbeirat | http://mainz.de/verzeichnisse/ortsrecht/Satzung_ueber_den_Beirat_fuer_die_Belange_von_Menschen_mit_Behinderungen_der_Stadt_Mainz_vom_07.05.2014.php.media/46562/Satzung_Behindertenbeirat_2014.pdf | 03.07.2018 |
| Advisory Council for People with Disabilities | Memmingen | Behindertenbeirat | https://behindertenbeirat.memmingen.de/865.html | 04.07.2018 |
| Advisory Council for People with Disabilities | Munich | Behindertenbeirat | https://www.muenchen.de/rathaus/Stadtrecht/vorschrift/32.pdf | 08.07.2018 |

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| Advisory Council for People with Disabilities | Münster | Kommission zur Förderung der Inklusion von Menschen mit Behinderungen | https://www.muenster-barrierefrei.de/_pdf/publikationen/Info-KIB-KOMM01.03.2015.pdf | 04.07.2018 |
| Advisory Council for People with Disabilities | Nuremberg | Behindertenrat | https://www.nuernberg.de/imperia/md/stadtrecht/dokumente/5/500/500_059.pdf | 27.06.2018 |
| Advisory Council for People with Disabilities | Offenbach | Behindertenbeirat | https://www.offenbach.de/medien/bindata/of/stadtrecht-sozial-und-gesundheitsverwaltung/5.300_Satzung_des_Behindertenbeirates_der_Stadt_Offenbach.pdf | 27.06.2018 |
| Advisory Council for People with Disabilities | Oldenburg | Behindertenbeirat | https://www.oldenburg.de/fileadmin/oldenburg/Benutzer/PDF/22/5.33.pdf | 27.06.2018 |
| Advisory Council for People with Disabilities | Osnabrück | Behindertenforum | https://www.osnabrueck.de/soziales/behinderung/behindertenforum.html | 27.06.2018 |
| Advisory Council for People with Disabilities | Potsdam | Behindertenbeirat | https://www.potsdam.de/sites/default/files/documents/hauptsatzung_2015_aenderungssatzung2_von_2017.pdf | 12.06.2018 |
| Advisory Council for People with Disabilities | Regensburg | Behindertenbeirat | https://www.regensburg.de/rathaus/stadtpolitik/beiraete/behindertenbeirat | 16.06.2018 |
| Advisory Council for People with Disabilities | Remscheid | Behindertenbeirat | https://www.remscheid.de/rathaus-und-politik/medienpool/gremien/0.03_behindertenbeirat-15wp.pdf | 17.06.2018 |
| Advisory Council for People with Disabilities | Rostock | Behindertenbeirat | http://www.behindertenbeirat-rostock.de/ | 18.06.2018 |
| Advisory Council for People with Disabilities | Saarbrücken | Behindertenbeirat | http://www.saarbruecken.de/media/download-5345008777b43 | 22.06.2018 |
| Advisory Council for People with Disabilities | Salzgitter | Behindertenbeirat | https://www.salzgitter.de/rathaus/downloads/50_-_Satzung_Beirat_fuer_Menschen_mit_Behinderungen.pdf | 22.06.2018 |
| Advisory Council for People with Disabilities | Schweinfurt | Behindertenbeirat | https://schweinfurt.de/m_1939 | 18.06.2018 |
| Advisory Council for People with Disabilities | Schwerin | Behindertenbeirat | https://www.schwerin.de/export/sites/default/galleries/Dokumente/Ortsrecht/Allgemeine-Verwaltung/Satzung-des-Senioren-und-des-Behindertenbeirates-der-Landeshauptstadt-Schwerin.pdf | 25.06.2018 |
| Advisory Council for People with Disabilities | Solingen | Behindertenbeirat | https://www.solingen.de/ris/inhalt/beirat-fuer-menschen-mit-behinderung-4806553/ | 25.06.2018 |
| Advisory Council for People with Disabilities | Straubing | Behindertenbeirat | http://straubing.de/de/buerger-und-soziales/rathaus/beiraete/behindertenbeirat.php | 06.06.2018 |
| Advisory Council for People with Disabilities | Stuttgart | Behindertenbeirat | https://www.stuttgart.de/item/show/273273/1/9/603102? | 25.06.2018 |
| Advisory Council for People with Disabilities | Suhl | Behindertenbeirat | https://www.suhltrifft.de/component/option,com_docman/task,doc_download/gid,197/Itemid,1421/ | 18.06.2018 |
| Advisory Council for People with Disabilities | Trier | Behindertenbeirat | https://trier.de/File/9542-full.pdf | 16.06.2018 |
| Advisory Council for People with Disabilities | Ulm | Inklusionsbeirat | https://www.ulm.de/leben_in_ulm/behinderte_menschen/inklusionsbeirat.104015.3076,3665,4073,3676,76803,104014.htm | 06.06.2018 |
| Advisory Council for People with Disabilities | Weimar | Behindertenbeirat | https://stadt.weimar.de/fileadmin/redaktion/Dokumente/buergerservices/ortsrecht/soziales_gesundheit/50_2_Behindertenbeirat1Ae17.06.10.pdf | 19.06.2018 |

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| Advisory Council for People with Disabilities | Wilhelmshaven | Behindertenbeirat | https://www.wilhelmshaven.de/PDF/Stadtrecht/Sr50-01_Lesefassung_Satzung_Behindertenbeirat.pdf?m=1490693506 | 20.06.2018 |
| Advisory Council for People with Disabilities | Wolfsburg | Behindertenbeirat | https://www.wolfsburg.de/~media/wolfsburg/statistik_daten_fakten/satzungen_verordnungen/30_satzung-beirat-menschen-mit-behinderungen.pdf?la=de-DE | 20.06.2018 |
| Advisory Council for People with Disabilities | Worms | Behindertenbeirat | https://www.worms.de/de-wAssets/docs/rathaus/ortsrecht_satzungen/4101-Behindertenberaetssatzung.pdf | 21.06.2018 |
| Advisory Council for People with Disabilities | Würzburg | Behindertenbeirat | https://www.wuerzburg.de/m_10789_dl | 21.06.2018 |
| Advisory Council for People with Disabilities | Wuppertal | Behindertenbeirat | https://www.wuppertal.de/rathaus-buergerservice/verwaltung/politik/stadtrecht-dokumente/5-07.pdf | 21.06.2018 |
| Senior Citizens' Advisory Council | Ansbach | Seniorenbeirat | https://www.ansbach.de/Bürger/Familie-Soziales/Senioren/Seniorenbeirat | 09.03.2018 |
| Senior Citizens' Advisory Council | Aschaffenburg | Seniorenbeirat | https://www.aschaffenburg.de/Verwaltung/Stadtrat/Gremien-mit-Buergerbeteiligung/DE_index_4758_65552.html | 09.03.2018 |
| Senior Citizens' Advisory Council | Augsburg | Seniorenbeirat | https://ratsinfo.augsburg.de/bi/au010.asp?T1=Beir%E4te&AU=Beirat&SORTVON=10&SORTBIS=16 | 12.03.2018 |
| Senior Citizens' Advisory Council | Bamberg | Seniorenbeirat | http://bamberg.sitzung-online.org/pi/au010.asp?T1=Aussch%FCsse&AU=Ausschuss&SORTBIS=5 | 12.03.2018 |
| Senior Citizens' Advisory Council | Bayreuth | Seniorenbeirat | https://www.bayreuth.de/rathaus-buergerservice/stadtverwaltung/ob-stadtrat-gremien/beiraete-der-stadt-bayreuth/ | 22.03.2018 |
| Senior Citizens' Advisory Council | Bielefeld | Seniorenrat | https://anwendungen.bielefeld.de/bi/kp0040.asp?__kgmr=786054& | 16.04.2018 |
| Senior Citizens' Advisory Council | Bochum | Seniorenbeirat | https://session.bochum.de/bi/kp0040.asp?__kgmr=78219& | 16.04.2018 |
| Senior Citizens' Advisory Council | Bottrop | Seniorenbeirat | http://ratsinfo.bottrop.de/buergerinfo/kp0040.asp?__kgmr=608878& | 30.04.2018 |
| Senior Citizens' Advisory Council | Brandenburg | Seniorenbeirat | https://www.stadt-brandenburg.de/rathaus/beiraete/fachbeiraete/ | 30.04.2018 |
| Senior Citizens' Advisory Council | Chemnitz | Seniorenbeirat | http://session-bi.stadt-chemnitz.de/kp0040.php?__kgmr=608878 | 04.05.2018 |
| Senior Citizens' Advisory Council | Coburg | Seniorenbeirat | http://ris.coburg.de/gremien/?__=UGhVM0hpd2NXNFdFcExjZVqOiNfdi_8vguZNVQjruAg | 04.05.2018 |
| Senior Citizens' Advisory Council | Cottbus | Seniorenbeirat | https://www.cottbus.de/ehrenamt/senioren/seniorenbeirat/index.html | 04.05.2018 |
| Senior Citizens' Advisory Council | Darmstadt | Seniorenbeirat | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Senior Citizens' Advisory Council | Delmenhorst | Seniorenbeirat | http://www.sitzungsdienst-delmenhorst.de/bi/au010.asp?T1=Beir%E4te&AU=Beir%E4te&SORTVON=501&SORTBIS=510&SELECT=1 | 22.05.2018 |
| Senior Citizens' Advisory Council | Dessau-Roßlau | Seniorenbeirat | https://verwaltung.dessau-rosslau.de/fileadmin/Verwaltungsportal_Dessau-Rosslau/Stadt_Buerger/Buergerservice/Stadtrecht/satzung_seniorenbeirat_2015.pdf | 08.07.2018 |
| Senior Citizens' Advisory Council | Dortmund | Seniorenbeirat | https://www.dortmund.de/de/rathaus_und_buergerservice/lokalpolitik/rat_und_ausschuesse/beiraete/rat_seniorenbeirat/start_seniorenbeirat/index.html | 24.05.2018 |

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| Senior Citizens' Advisory Council | Dresden | Seniorenbeirat | https://www.dresden.de/media/pdf/satzungen/satzung_haupt.pdf | 08.07.2018 |
| Senior Citizens' Advisory Council | Düsseldorf | Seniorenrat | https://www.duesseldorf.de/stadtrecht/5/50/50-205.html | 09.07.2018 |
| Senior Citizens' Advisory Council | Duisburg | Seniorenbeirat | https://duisburg.de/vv/produkte/pro_du/dez_iii/50/seniorenbeirat.php.media/12189/G_E_S_C_H___F_T_S_O_R_D_N_U_N_G.pdf | 09.07.2018 |
| Senior Citizens' Advisory Council | Emden | Seniorenbeirat | https://www.emden.de/fileadmin/media/stadtemden/PDF/Verwaltung/Ortsrecht/50_3_satzung_seniorenbeirat.pdf | 06.06.2018 |
| Senior Citizens' Advisory Council | Erfurt | Seniorenbeirat | http://www.erfurt.de/mam/ef/rathaus/stadtrecht/5/5068.pdf | 13.06.2018 |
| Senior Citizens' Advisory Council | Erlangen | Seniorenbeirat | https://www.erlangen.de/Portaldata/1/Resources/110_stadtrecht/[1xx.xx]/_190.00__i.d.F._vom_05.05.2015_Seniorenbeirat.pdf | 13.06.2018 |
| Senior Citizens' Advisory Council | Essen | Seniorenbeirat | https://media.essen.de/media/wwwessende/aemter/50/seniorenbeirat_1/Satzung.pdf | 14.06.2018 |
| Senior Citizens' Advisory Council | Flensburg | Seniorenbeirat | http://www.flensburg.de/PDF/Satzung_f%C3%BCr_den_Seniorenbeirat_der_Stadt_Flensburg.PDF?ObjSvrID=2306&ObjID=325&ObjLa=1&Ext=PDF&WTR=1&_ts=1446792351 | 07.06.2018 |
| Senior Citizens' Advisory Council | Frankenthal (Pfalz) | Seniorenbeirat | http://www.frankenthal.de/sv_frankenthal/de/Homepage/Stadt%20und%20Bürger/Verwaltung/Ortsrecht/5-09%20Seniorenbeiratssatzung.pdf | 06.06.2018 |
| Senior Citizens' Advisory Council | Frankfurt (Oder) | Seniorenbeirat | https://www.frankfurt-oder.de/PDF/Hauptsatzung_2_%C3%84nderung.PDF?ObjSvrID=2616&ObjID=2417&ObjLa=1&Ext=PDF&WTR=1&_ts=1476277094 | 19.06.2018 |
| Senior Citizens' Advisory Council | Frankfurt (Main) | Seniorenbeirat | https://frankfurt.de/sixcms/media.php/738/Satzung_SB_2014.2473153.pdf | 19.06.2018 |
| Senior Citizens' Advisory Council | Fürth | Seniorenrat | https://www.fuerth.de/Portaldata/1/Resources/FuertherRathaus/Ortsrecht/10_12_satzung_der_stadt_fuerth_fuer_den_seniorenbeirat.pdf | 06.06.2018 |
| Senior Citizens' Advisory Council | Gelsenkirchen | Seniorenbeirat | https://www.gelsenkirchen.de/de/Familie/Aelter_werden/Beirat_fuer_Senioren.aspx | 28.06.2018 |
| Senior Citizens' Advisory Council | Gera | Seniorenbeirat | https://www.gera.de/fm/193/Seniorenmitwirkungssatzung_19.172015.pdf | 28.06.2018 |
| Senior Citizens' Advisory Council | Göttingen | Seniorenbeirat | https://www.goettingen.de/pics/download/1_1484235265/4-6-0_-_SATZUNG_FUeR_DEN_SENIORENBEIRAT_DER_STADT_GOeTTINGEN.pdf | 28.06.2018 |
| Senior Citizens' Advisory Council | Hagen | Seniorenbeirat | https://www.hagen.de/web/de/fachbereiche/fb_55/fb_55_04/fb_55_0403/seniorenbeirat.html | 11.06.2018 |
| Senior Citizens' Advisory Council | Hamm | Seniorenbeirat | https://www.hamm.de/soziales-und-gesellschaft/senioren/seniorenbeirat/die-satzung-des-seniorenbeirates.html | 06.06.2018 |
| Senior Citizens' Advisory Council | Hannover | Seniorenbeirat | https://www.hannover.de/content/download/407383/8543737/file/Wahlordnung-Seniorenbeirat.pdf | 15.06.2018 |
| Senior Citizens' Advisory Council | Jena | Seniorenbeirat | https://www.jena.de/fm/694/e02.pdf | 13.06.2018 |
| Senior Citizens' Advisory Council | Kaiserslautern | Seniorenbeirat | https://kaiserslautern.de/mb/themen/stadtverwaltung/ortsrecht/pdf/9_5_seniorenbeiratssatzung.pdf | 29.06.2018 |
| Senior Citizens' Advisory Council | Karlsruhe | Stadtseniorenrat | https://www.karlsruhe.de/b3/soziales/personengruppen/senioren/stadtseniorenrat/satzung | 29.06.2018 |

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| Senior Citizens' Advisory Council | Kassel | Seniorenbeirat | http://www.serviceportal-kassel.de/cms05/satzungen/067043/index.html | 29.06.2018 |
| Senior Citizens' Advisory Council | Kempten | Seniorenbeirat | https://ratsinfo.kempten.de/bi/kp0040.php?__kgmr=20 | 11.06.2018 |
| Senior Citizens' Advisory Council | Kiel | Seniorenbeirat | https://www11.kiel.de/ortsrecht/root/download.php?typ=lf&fid=988561bc54efd5073176370e947d4500 | 29.06.2018 |
| Senior Citizens' Advisory Council | Koblenz | Seniorenbeirat | https://www.koblenz.de/r30/vc_content/bilder/firma25/k10_4_218_seniorenbeiratssatzung.pdf | 30.06.2018 |
| Senior Citizens' Advisory Council | Krefeld | Seniorenbeirat | https://www.krefeld.de/rat/inhalt/aufgaben-des-seniorenbeirates/ | 13.06.2018 |
| Senior Citizens' Advisory Council | Landau (Pfalz) | Beirat für ältere Menschen | https://www.landau.de/media/custom/2644_677_1.PDF?1491808011 | 14.06.2018 |
| Senior Citizens' Advisory Council | Leipzig | Seniorenbeirat | https://www.leipzig.de/buergerservice-und-verwaltung/stadtrat/fachbeiraete/seniorenbeirat/ | 30.06.2018 |
| Senior Citizens' Advisory Council | Lübeck | Seniorenbeirat | http://luebeck.de/stadt_politik/rathaus/verwaltung/seniorenbeirat/index.html | 30.06.2018 |
| Senior Citizens' Advisory Council | Magdeburg | Seniorenbeirat | https://www.magdeburg.de/PDF/Amtsblatt_30_17_Senioren.PDF?ObjSvrID=37&ObjID=28083&ObjLa=1&Ext=P DF&WTR=1&_ts=1512121711 | 08.07.2018 |
| Senior Citizens' Advisory Council | Mainz | Seniorenbeirat | http://mainz.de/verzeichnisse/ortsrecht/Satzung_ueber_die_Bildung_eines_Seniorenbeirates.php.media/46569/50.1_-_Satzung_Seniorenbeirat_vom_05.05.2004.pdf | 03.07.2018 |
| Senior Citizens' Advisory Council | Memmingen | Seniorenbeirat | https://stadtrecht.memmingen.de/fileadmin/Stadtrecht/MStR/0000/0320.pdf | 04.07.2018 |
| Senior Citizens' Advisory Council | Mülheim | Seniorenbeirat | https://www.muelheim-ruhr.de/cms/mitglieder_des_seniorenbeirats1.html | 08.07.2018 |
| Senior Citizens' Advisory Council | Munich | Seniorenbeirat | http://www.seniorenbeirat-muenchen.de/ueber-uns/satzung/ | 08.07.2018 |
| Senior Citizens' Advisory Council | Münster | Kommunale Seniorenvertretung | http://www.seniorenvertretung-muenster.de/ueber-uns | 04.07.2018 |
| Senior Citizens' Advisory Council | Neumünster | Seniorenbeirat | http://www.neumuenster.de/cms/files/1.4____satzung_des_seniorenbeirats_der_stadt_neumuenster_1.pdf | 21.06.2018 |
| Senior Citizens' Advisory Council | Nuremberg | Seniorenrat | https://www.nuernberg.de/imperia/md/stadtrecht/dokumente/5/511/511_733.pdf | 27.06.2018 |
| Senior Citizens' Advisory Council | Oberhausen | Seniorenbeirat | https://www.oberhausen.de/de/index/leben-in-oberhausen/senioren/kulturelle_angebote/seniorenbeirat.php | 27.06.2018 |
| Senior Citizens' Advisory Council | Offenbach | Seniorenrat | https://www.offenbach.de/medien/bindata/of/stadtrecht-sozial-und-gesundheitsverwaltung/5.400-0_Satzung_des_Seniorenrates_der_Stadt_Offenbach_-_Lesefassung.pdf | 27.06.2018 |
| Senior Citizens' Advisory Council | Oldenburg | Seniorenbeirat | https://www.oldenburg.de/fileadmin/oldenburg/Benutzer/PDF/22/5.33.pdf | 27.06.2018 |
| Senior Citizens' Advisory Council | Osnabrück | Seniorenbeirat | https://www.osnabrueck.de/fileadmin/eigene_Dateien/Geschaeftsordnung_Seniorenbeirat_Rat_OS.pdf | 27.06.2018 |
| Senior Citizens' Advisory Council | Pirmasens | Seniorenbeirat | http://www.pirmasens.de/dante-cms/app_data/adam/repo/tempmedia/1528790028.OYMUSVZXGJAUVBHKIBMFOHIABZJHZLES/41827_seniorenbeirat_geschaeftsordnung.pdf | 12.06.2018 |

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| Senior Citizens' Advisory Council | Potsdam | Seniorenbeirat | https://www.potsdam.de/sites/default/files/documents/satzungseniorenvertretung.pdf | 12.06.2018 |
| Senior Citizens' Advisory Council | Regensburg | Seniorenbeirat | https://www.regensburg.de/rathaus/stadtpolitik/beiraete/seniorenbeirat | 16.06.2018 |
| Senior Citizens' Advisory Council | Remscheid | Seniorenbeirat | https://www.remscheid.de/rathaus-und-politik/medienpool/gremien/0.03_seniorenbeirat-15wp.pdf | 17.06.2018 |
| Senior Citizens' Advisory Council | Rosenheim | Seniorenbeirat | https://rosenheim.de/fileadmin/Dateien/Ortsrecht/417.pdf | 17.06.2018 |
| Senior Citizens' Advisory Council | Rostock | Seniorenbeirat | http://passthrough.fw-notify.net/download/359664/http://seniorenbeirat-rostock.de/downloads/broschuere_2016.pdf | 18.06.2018 |
| Senior Citizens' Advisory Council | Saarbrücken | Seniorenbeirat | http://www.saarbruecken.de/media/download-53970ffa8d32e | 22.06.2018 |
| Senior Citizens' Advisory Council | Salzgitter | Seniorenbeirat | https://www.salzgitter.de/rathaus/downloads/Berufungsordnung.pdf | 22.06.2018 |
| Senior Citizens' Advisory Council | Schwabach | Seniorenrat | http://schwabach.de/de/stadtverwaltung/referat-2-recht-soziales-und-umwelt/339-amt-fuer-senioren-und-soziales/einrichtungen-und-sachgebiete-des-amts-fuer-senioren-und-soziales/senioren/allgemeines-der-seniorenarbeit/seniorenrat/4175-mitglieder-des-seniorenrats.html | 23.06.2018 |
| Senior Citizens' Advisory Council | Schweinfurt | Seniorenbeirat | https://schweinfurt.de/m_19891 | 18.06.2018 |
| Senior Citizens' Advisory Council | Schwerin | Seniorenbeirat | https://www.schwerin.de/export/sites/default/galleries/Dokumente/Ortsrecht/Allgemeine-Verwaltung/Satzung-des-Senioren-und-des-Behindertenbeirates-der-Landeshauptstadt-Schwerin.pdf | 25.06.2018 |
| Senior Citizens' Advisory Council | Solingen | Seniorenbeirat | https://www.solingen.de/ris/inhalt/seniorenbeirat-7639344/&s1=11 | 25.06.2018 |
| Senior Citizens' Advisory Council | Speyer | Seniorenbeirat | https://www.speyer.de/sv_speyer/mobile/de/Rathaus/Stadtrat/Sitzverteilung/ausschussverzeichnis_gesamt.pdf | 25.06.2018 |
| Senior Citizens' Advisory Council | Straubing | Seniorenbeirat | http://straubing.de/de/buerger-und-soziales/rathaus/beiraete/seniorenbeirat.php | 06.06.2018 |
| Senior Citizens' Advisory Council | Suhl | Seniorenbeirat | https://www.suhltrifft.de/component/option,com_docman/task,doc_download/gid,1424/Itemid,1421/ | 18.06.2018 |
| Senior Citizens' Advisory Council | Trier | Seniorenbeirat | https://www.trier.de/icc/internet_de/nav/c58/broker.jsp?uMen=c581f360-80e0-1613-ba1e-4620a348b027 | 16.06.2018 |
| Senior Citizens' Advisory Council | Weimar | Seniorenbeirat | https://stadt.weimar.de/fileadmin/redaktion/Dokumente/buergerservices/ortsrecht/soziales_gesundheit/50_1_Seniorenbeirat.pdf | 19.06.2018 |
| Senior Citizens' Advisory Council | Wiesbaden | Seniorenbeirat | http://www.wiesbaden.de/medien-zentral/dok/rathaus/stadtrecht/1_-3.1_Seniorenbeiratsordnung.pdf | 20.06.2018 |
| Senior Citizens' Advisory Council | Wilhelmshaven | Seniorenbeirat | https://www.wilhelmshaven.de/PDF/Stadtrecht/Sr50-02_Geschaeftsordnung_des_Seniorenbeirates.pdf?m=1418988697 | 20.06.2018 |
| Senior Citizens' Advisory Council | Worms | Seniorenbeirat | https://www.worms.de/de-wAssets/docs/rathaus/ortsrecht_satzungen/4091_Seniorenbeiratssatzung.pdf | 21.06.2018 |
| Senior Citizens' Advisory Council | Würzburg | Seniorenbeirat | https://www.wuerzburg.de/media/www.wuerzburg.de/org/med_9025/403868_seniorenbeirat_satzung_stand_29.03.2012.pdf | 21.06.2018 |
| Senior Citizens' Advisory Council | Wuppertal | Seniorenbeirat | https://www.wuppertal.de/rathaus-buergerservice/verwaltung/politik/stadtrecht-dokumente/0-40.pdf | 21.06.2018 |

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|-----------------------------------|-----------------------|-----------------------------|---|------------|
| Senior Citizens' Advisory Council | Zweibrücken | Seniorenbeirat | https://www.zweibruecken.de/sv_zweibruecken/de/Rathaus/Stadtverwaltung/Ortsrechtsammlung/Satzung%205.1.0%20%C3%BCber%20die%20Bildung%20eines%20Seniorenbeirats.pdf | 12.06.2018 |
| Youth Council | Delmenhorst | Kinder- und Jugendparlament | http://www.sitzungsdienst-delmenhorst.de/bi/au010.asp?T1=Beir%E4te&AU=Beir%E4te&SORTVON=501&SORTBIS=510&SELECT=1 | 22.05.2018 |
| Youth Council | Düsseldorf | Jugendrat | https://www.duesseldorf.de/stadtrecht/5/51/51-103.html | 09.07.2018 |
| Youth Council | Erlangen | Jugendparlament | https://www.jugendparlament.net/app/download/14128776225/Satzung.pdf?t=1469651055 | 13.06.2018 |
| Youth Council | Frankenthal (Pfalz) | Jugendbeirat | http://www.frankenthal.de/sv_frankenthal/de/Homepage/Stadt%20und%20Bürger/Verwaltung/Ortsrecht/5-08%20Jugendbeiratssatzung.pdf | 06.06.2018 |
| Youth Council | Heidelberg | Jugendgemeinderat | https://www.heidelberg.de/site/Heidelberg_ROOT/get/documents_E-776753767/heidelberg/Objektdatenbank/30/PDF/30_pdf_orstr_1-2-7_Jugendgemeinderat.pdf | 11.06.2018 |
| Youth Council | Heilbronn | Jugendgemeinderat | https://jugendgemeinderat.heilbronn.de/startseite.html | |
| Youth Council | Herne | Kinder- und Jugendparlament | https://www.herne.de/Rathaus/Politik/Kinder-und-Jugendparlament/ | 14.06.2018 |
| Youth Council | Jena | Jugendparlament | https://www.jena.de/fm/694/f12.pdf | 13.06.2018 |
| Youth Council | Kaiserslautern | Jugendvertretung | https://kaiserslautern.de/mb/themen/stadtverwaltung/ortsrecht/pdf/5_4_jugendvertretungssatzung.pdf | 29.06.2018 |
| Youth Council | Kiel | Kinder- und Jugendbeirat | https://www11.kiel.de/ortsrecht/root/download.php?typ=lf&fid=20e0e506a6b4d020a148f77c96b5486f | 29.06.2018 |
| Youth Council | Koblenz | Jugendrat | https://www.koblenz.de/r30/vc_content/bilder/firma25/2018_06_07_wahlordnung_jugendrat.pdf | 30.06.2018 |
| Youth Council | Krefeld | Jugendbeirat | https://www.krefeld.de/c12574d40034948f/files/1.70_geschaeftsordnung_fuer_den_jugensbeirat.pdf/\$file/1.70_geschaeftsordnung_fuer_den_jugensbeirat.pdf?openelement | 13.06.2018 |
| Youth Council | Leipzig | Jugendparlament | https://www.leipzig.de/buergerservice-und-verwaltung/aemter-und-behoerdengaenge/satzungen/?tx_ewerkformsmanager_pi%5Buid%5D=421&tx_ewerkformsmanager_pi%5Baction%5D=download&tx_ewerkformsmanager_pi%5Bcontroller%5D=Statues&cHash=31886e89e96b34b873e940457b1167bd | 30.06.2018 |
| Youth Council | Leverkusen | Jugendforum | https://www.leverkusen.de/rathaus-service/downloads/rathaus/ortsrecht/satzungjugendforum4514.pdf | 30.06.2018 |
| Youth Council | Mannheim | Jugendbeirat | http://68deins.majo.de/wp-content/uploads/2018/03/68deins_flyer_2018_screen.pdf | 04.07.2018 |
| Youth Council | Mülheim | Jugendstadtrat | https://www.muelheim-ruhr.de/cms/shared/datei_download.php?uid=cd539838abc42ac4cecb54f7d5dba6d3 | 08.07.2018 |
| Youth Council | Münster | Jugendrat | https://www.stadt-muenster.de/recht/ortsrecht/satzungen/detailansicht/satzungsnummer/5104.html | 04.07.2018 |
| Youth Council | Neumünster | Kinder- und Jugendbeirat | http://www.neumuenster.de/cms/files/1.6___kinder-_und_jugendbeiratssatzung.pdf | 21.06.2018 |
| Youth Council | Neustadt (Weinstraße) | Jugendvertretung | https://www.neustadt.eu/output/download.php?fid=2579.48.1..PDF&fn=0_10_Jugendvertretung | 28.06.2018 |
| Youth Council | Oberhausen | Jugendparlament | https://www.jugendparlament-oberhausen.de/images/Vorlagen_Jupa/0001_Jugendparlament_Oberhausen_06112017_Änderung.pdf | 27.06.2018 |
| Youth Council | Offenbach | Kinder- und Jugendparlament | https://www.oldenburg.de/fileadmin/oldenburg/Benutzer/PDF/40/Gestaltungsbeirat/Geschaeftsordnung.pdf | 27.06.2018 |
| Youth Council | Osnabrück | Kinderbeirat | https://www.osnabrueck.de/kinderbeirat.html | 27.06.2018 |
| Youth Council | Pforzheim | Jugendgemeinderat | https://www.pforzheim.de/buerger/gemeinderat/jugendgemeinderat.html | 12.06.2018 |
| Youth Council | Pirmasens | Jugendstadtrat | http://www.pirmasens.de/dante-cms/40293/Jugendstadtrat.html | 12.06.2018 |
| Youth Council | Regensburg | Jugendbeirat | https://www.regensburg.de/sixcms/media.php/140/9.3541443.pdf | 16.06.2018 |

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|----------------------------------|--------------------|--|---|------------|
| Youth Council | Remscheid | Jugendrat | https://www.jugendrat-remscheid.de/wp-content/uploads/2015/11/satzung_jugendrat_remscheid.pdf | 17.06.2018 |
| Youth Council | Salzgitter | Jugendparlament | http://www.salzgitter.de/rathaus/downloads/SZ_JuPa_Allgemein_Flyer_jpg.pdf | 22.06.2018 |
| Youth Council | Schwerin | Kinder- und Jugendrat | https://www.schwerin.de/export/sites/default/galleries/Dokumente/Ortsrecht/Allgemeine-Verwaltung/Satzung-des-Kinder-und-Jugendrates-der-Landeshauptstadt-Schwerin.pdf | 25.06.2018 |
| Youth Council | Solingen | Jugendstadtrat | https://www.solingen.de/C1257EC0004AF6F5/files/51-05.pdf?%24file/51-05.pdf | 25.06.2018 |
| Youth Council | Speyer | Jugendstadtrat | https://www.speyer.de/sv_speyer/de/Rathaus/Verwaltung/Ortsrechtssammlung/1.1.3_jugendvertretung_2013.pdf | 25.06.2018 |
| Youth Council | Suhl | Kinder- und Jugendbeirat | https://www.suhltrifft.de/component/option,com_docman/task,doc_download/gid,199/Itemid,1421/ | 18.06.2018 |
| Youth Council | Trier | Jugendparlament | https://trier.de/File/9538-full.pdf | 16.06.2018 |
| Youth Council | Wiesbaden | Jugendparlament | http://www.wiesbaden.de/medien-zentral/dok/rathaus/stadtrecht/1_-_3.3_Jugendparlamentsordnung_Stand_2017_.pdf | 20.06.2018 |
| Youth Council | Wilhelms- haven | Jugendparlament | https://www.wilhelmshaven.de/PDF/Stadtrecht/Sr51-03_Geschaeftsordnung_des_Jugendparlamentes_2014.pdf?m=1478776962 | 20.06.2018 |
| Youth Council | Wolfsburg | Kinderbeirat | https://www.wolfsburg.de/leben/familie/kinder-und-jugendbuero-wolfsburg | 20.06.2018 |
| Youth Council | Worms | Jugendparlament | https://www.worms.de/de-wAssets/docs/rathaus/ortsrecht_satzungen/4021.pdf | 21.06.2018 |
| Youth Council | Potsdam | Jugendrat | https://www.potsdam-abc.de/verzeichnis/visitenkarte/vorstellung/mandat/64325/jugendrat-potsdam.html | 07.09.2018 |
| Civic Participation Committee | Aschaffenburg | Demographiewerkstatt | https://www.aschaffenburg.de/Buerger-in-Aschaffenburg/Buergerbeteiligung/Projekte-mit-Buergerbeteiligung/DE_index_4180_62195.html | 09.03.2018 |
| Civic Participation Committee | Bonn | Beirat Bürgerbeteiligung | http://www2.bonn.de/bo_ris/ris_sql/agm_index.asp?e_register=0&e_content=3502&e_gre_id=220&e_p_p_id=10&e_gre_art=Gremien&e_caller=hbr_gremien_result | 20.04.2018 |
| Civic Participation Committee | Brandenburg | Bürgerbeiräte | https://www.stadt-brandenburg.de/rathaus/beiraete/buergerbeiraete/ | 30.04.2018 |
| Civic Participation Committee | Braunschweig | Forum Demokratie | http://www.braunschweig.de/leben/soziales/migration/angebote_projekte/demokratie/demokratie_forum.html | 04.05.2018 |
| Civic Participation Committee | Delmenhorst | Arbeitskreis BürgerIDEENBörse | http://www.sitzungsdienst-delmenhorst.de/bi/au010.asp?T1=Beir%E4te&AU=Beir%E4te&SORTVON=501&SORTBIS=510&SELECT=1 | 22.05.2018 |
| Civic Participation Committee | Erfurt | Ehrenamtsbeirat | http://www.erfurt.de/mam/ef/rathaus/stadtrecht/1/1412.pdf | 13.06.2018 |
| Civic Participation Committee | Halle | Engagement-Beirat | http://www.halle.de/push.aspx?s=/publications/5935/sr_106-0_richtlinie_der_stadt_halle__saale__b_rger.pdf | 15.06.2018 |
| Civic Participation Committee | Heidelberg | Arbeitskreis "Bürgerbeteiligung" | https://www.heidelberg.de/hd_Lde/HD/Rathaus/Arbeitskreis+Buergerbeteiligung.html | 11.06.2018 |
| Civic Participation Committee | Jena | Beirat Bürgerbeteiligung | https://www.jena.de/fm/694/a13.pdf | 13.06.2018 |
| Civic Participation Committee | Jena | Ehrenamtsbeirat | https://service.jena.de/sites/default/files/2018-11/Ehrenamt%20-%20Richtlinie%20Vergabe%20und%20Foerderung%20Ehrenamt.pdf | 13.06.2018 |
| Civic Participation Committee | Landau (Pfalz) | Beteiligungsrat | https://www.landau.de/output/download.php?file=%2Fmedia%2Fcustom%2F2644_1768_1.PDF%3F1510826035&fn=8_Geschäftsordnung_Beteiligungsrat_final | 14.06.2018 |
| Civic Participation Committee | Munich | Fachbeirat für bürgerschaftliches Engagement | http://www.foebe-muenchen.de/?MAIN_ID=7 | 08.07.2018 |

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|-----------------------------------|------------------|--|---|------------|
| Civic Participation Committee | Oberhausen | Bürgerrat | https://www.oberhausen.de/de/index/rathaus/buergerbeteiligung/buergerrat.php | 27.06.2018 |
| Civic Participation Committee | Oberhausen | Arbeitskreis Bürgerbeteiligung | https://www.oberhausen.de/de/index/rathaus/buergerbeteiligung/buergerinnenbeteiligung-material/geschaeftsordnung_arbeitskreis.pdf | 27.06.2018 |
| Civic Participation Committee | Pforzheim | Beteiligungsbeirat | https://www.pforzheim.de/buerger/rathaus/buergerbeteiligung/beteiligungsbeirat.html | 12.06.2018 |
| Civic Participation Committee | Stuttgart | Beteiligungsbeirat | https://www.stuttgart-meine-stadt.de/beteiligungsbeirat/ | 25.06.2018 |
| Civic Participation Committee | Wuppertal | Beirat Bürgerbeteiligung | https://www.wuppertal.de/microsite/buergerbeteiligung/medien/bindata/2018_leitlinien_A5_web.pdf | 21.06.2018 |
| Migration Advisory Council | Frankfurt (Main) | Kommission für Integration und Vielfalt | https://frankfurt.de/sixcms/media.php/738/GO%20f%C3%BCr%20die%20vom%20Magistrat%20gebildeten%20Kommissionen%20Stand%2008.01.2018%29.pdf | 19.06.2018 |
| Senior Citizens' Advisory Council | Ingolstadt | Kommission für Seniorenarbeit | https://www.ingolstadt.de/media/custom/465_1282_1.PDF?1518514172 | 11.06.2018 |
| Senior Citizens' Advisory Council | Cologne | Stadtarbeitsgemeinschaft Seniorenpolitik | https://www.stadt-koeln.de/mediaasset/content/pdf-rat-gremien/ausschuesse/soz-sen/geschäftsordnung_für_die_gremien_der_seniorenpolitik_der_stadt_köln_2016.pdf | 30.06.2018 |

Table 18 Analyzed committees in the category “Social Issues”

| Type | City | Committee name | Source | Date |
|------------------------------------|--------------|--|---|------------|
| Committee for Child Issues | Salzgitter | Kinderkommission | https://www.salzgitter.de/rathaus/downloads/Amtsblatt_07_2014.pdf | 22.06.2018 |
| Committee for Child Poverty | Braunschweig | Beirat Kinderarmut | http://www.braunschweig.de/leben/soziales/kinderarmut/index.html | 04.05.2018 |
| Committee for Family Issues | Leipzig | Kinder- und Familienbeirat | https://ratsinfo.leipzig.de/bi/au020.asp?AULFDNR=2318&altpoption=Beirat | 30.06.2018 |
| Committee for Family Issues | Straubing | Familienbeirat | http://straubing.de/de/buerger-und-soziales/rathaus/beiraete/familienbeirat.php | 06.06.2018 |
| Committee for Gay Men and Women | Cologne | Stadtarbeitsgemeinschaft Lesben, Schwule und Transgender | https://www.stadt-koeln.de/mediaasset/content/satzungen/geschäftsordnung_für_die_stadtarbeitsgemeinschaft_lesben__schwule_und_transgender_der_stadt_köln_2011-05-05.pdf | 30.06.2018 |
| Committee for Girl's Work | Bielefeld | Fachbeirat für Mädchenarbeit | https://anwendungen.bielefeld.de/bi/kp0040.asp?__kgmr=459135& | 16.04.2018 |
| Committee for International Issues | Pforzheim | Internationaler Beirat | https://www.pforzheim.de/nc/buerger/aktuelles-presse/pressemeldungen/s1/article/detail/News/internationaler-beirat-fuer-pforzheim-stadt-pforzheim-ruft-sachkundige-einwohnerinnen-und-einwohner.html?sword_list%5B0%5D=Migration | 12.06.2018 |
| Committee for Refugee Issues | Cologne | Runder Tisch Flüchtlingsfragen | https://ratsinformation.stadt-koeln.de/kp0040.asp?__kgmr=151& | 30.06.2018 |
| Committee for Women's Issues | Bochum | Frauenbeirat | https://session.bochum.de/bi/kp0040.asp?__kgmr=435791& | 16.04.2018 |
| Committee for Women's Issues | Hagen | Frauenbeirat | https://www.hagen.de/buergerinfo-m/au020_m.asp?T1=Gremium&AULFDNR=44&altpoption=Gremium | 11.06.2018 |

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|------------------------------|---------------|---|---|------------|
| Committee for Women's Issues | Schwabach | Frauenkommission | http://schwabach.de/de/stadtverwaltung/oberbuergemeister/385-gleichstellungsstelle/allgemeines-der-gleichstellungsstelle/frauenkommission/596-mitglieder.html | 23.06.2018 |
| Psychosocial Committee | Darmstadt | Psychosozialer Beirat | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Psychosocial Committee | Leipzig | Psychiatriebeirat | https://www.leipzig.de/buergerservice-und-verwaltung/stadtrat/fachbeiraete/psychiatriebeirat/ | 30.06.2018 |
| Psychosocial Committee | Ludwigshafen | Psychiatriebeirat | http://www.ludwigshafen.de/buergernah/soziales-und-gesellschaft/gesundheit/koordinierungsstelle-fuer-psychiatrie/ | 07.07.2018 |
| Psychosocial Committee | Mainz | Psychiatriebeirat | http://mainz.de/verzeichnisse/ortsrecht/Satzung_fuer_den_Psychiatriebeirat_der_Stadt_Mainz.php.media/46548/PsychBeiSatzung.pdf | 03.07.2018 |
| Psychosocial Committee | Worms | Psychiatriebeirat | http://www.buergerinfoworms.de//kp0040.php?__kgmr=58& | 21.06.2018 |
| Self-Help Committee | Herne | Selbsthilfebeirat | https://www.herne.de/PDF/Gesundheit/Text-21-b-Geschäftsordnung-städ-Richtlinien-Selbsthilfebeirat-2016.pdf | 14.06.2018 |
| Self-Help Committee | Munich | Selbsthilfebeirat | http://www.selbsthilfebeirat-muenchen.de/zusammensetzung/ | 08.07.2018 |
| Self-Help Committee | Suhl | Selbsthilfebeirat | https://www.suhltrift.de/component/option,com_docman/task,doc_download/gid,748/Itemid,1421/ | 18.06.2018 |
| Social Security Committee | Aschaffenburg | Sozialbeirat | https://www.aschaffenburg.de/Verwaltung/Stadtrat/Gremien-mit-Buergerbeteiligung/DE_index_4758_65555.html | 09.03.2018 |
| Social Security Committee | Darmstadt | Magistratskommission Soziale Sicherung | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Social Security Committee | Darmstadt | Magistratskommission Soziale Brennpunkte | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Social Security Committee | Erlangen | Sozialbeirat | https://ratsinfo.erlangen.de/getfile.php?id=18077954&type=do& | 13.06.2018 |
| Social Security Committee | Fürth | Beirat für Sozialhilfe, Sozial- und Seniorenangelegenheiten | https://www.fuerth.de/Portaldata/1/Resources/FuertherRathaus/Ortsrecht/10_2_geschaeftsordnung_stadtrat_fuerth.pdf | 06.06.2018 |
| Social Security Committee | Offenbach | Sozialkommission | https://www.offenbach.de/medien/bindata/of/stadtrecht-allgemeine-verwaltung/1.031_Kommissionsordnung_in_der_Fassung_vom_07.06.2017.pdf | 27.06.2018 |
| Social Security Committee | Würzburg | Sozialbeirat | https://www.wuerzburg.de/media/www.wuerzburg.de/org/med_9025/439429_satzung_sozialbeirat.pdf | 21.06.2018 |
| Social Security Committee | Hof | Sozialbeirat | https://www.stadt-hof.org/session/bi/kp0040.php?__kgmr=8& | 25.08.2018 |
| Sociocultural Committee | Jena | Beirat für Soziokultur | https://www.jena.de/fm/694/d12.pdf | 13.06.2018 |
| Youth Center Committee | Bayreuth | Beirat für das Kommunale Jugendzentrum | https://www.bayreuth.de/rathaus-buergerservice/stadtverwaltung/ob-stadtrat-gremien/beiraete-der-stadt-bayreuth/ | 22.03.2018 |

Table 19 Analyzed committees in the category “Public Order”

| Type | City | Committee name | Source | Date |
|-----------------------------------|-------------|---------------------------------|---|------------|
| Security and Prevention Committee | Brandenburg | Sicherheits- und Präventionsrat | https://www.stadt-brandenburg.de/rathaus/beiraete/fachbeiraete/ | 30.04.2018 |
| Security and Prevention Committee | Cottbus | Präventionsrat | https://www.cottbus.de/verwaltung/gb_ii/praevention/ | 04.05.2018 |

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|-----------------------------------|------------------|--|---|------------|
| Security and Prevention Committee | Darmstadt | Kommunaler Präventionsrat | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Security and Prevention Committee | Frankfurt (Oder) | Sicherheits- und Präventionsrat | https://www.frankfurt-oder.de/B%C3%BCrger/Gesellschaft-Leben/Sicherheits-und-Pr%C3%A4ventionsrat | 19.06.2018 |
| Security and Prevention Committee | Fürth | Sicherheitsbeirat | https://www.fuerth.de/Portaldata/1/Resources/FuertherRathaus/Ortsrecht/33_16_sicherheitsbeiratsatzung_der_stadt_fuerth.pdf | 06.06.2018 |
| Security and Prevention Committee | Gelsenkirchen | Präventionsrat | https://www.gelsenkirchen.de/de/rathaus/informationen/verordnungen_und_satzungen/_doc/Geschäftsordnung_PräGE_Stand_27_09_2017.pdf | 28.06.2018 |
| Security and Prevention Committee | Göttingen | Präventionsrat | https://www.goettingen.de/pics/medien/1_1495118970/Geschäftsordnung_des_Praeventionsrates__vom_15_06_2011.pdf | 28.06.2018 |
| Security and Prevention Committee | Halle | Präventionsrat | http://www.halle.de/de/Verwaltung/Lebenslagen/Zivilcourage/Praeventionsrat/ | 15.06.2018 |
| Security and Prevention Committee | Ingolstadt | Sicherheitsbeirat | https://www.ingolstadt.de/sessionnet/kp0040.php?__kgmr=83& | 11.06.2018 |
| Security and Prevention Committee | Leipzig | Präventionsrat | https://www.leipzig.de/fileadmin/mediendatenbank/leipzig-de/Stadt/02.3_Dez3_Umwelt_Ordnung_Sport/32_Ordnungsamt/KPR/Content/KPR-Geschäftsordnung-Internet.pdf | 30.06.2018 |
| Security and Prevention Committee | Ludwigshafen | Rat für Kriminalitätsverhütung | www.ludwigshafen.de/buergernah/politik/rat-fuer-kriminalitaetsverhuetung/ | 07.07.2018 |
| Security and Prevention Committee | Passau | Sicherheitsbeirat | http://passau.de/Dox.aspx?docid=6731C5A4-F909-4503-9E56-C477A518E8EB | 06.06.2018 |
| Security and Prevention Committee | Regensburg | Sicherheitsbeirat | https://www.regensburg.de/sixcms/media.php/140/3.3530131.pdf | 16.06.2018 |
| Security and Prevention Committee | Trier | Kriminalpräventiver Rat | https://www.trier.de/leben-in-trier/sicherheit/kriminalpraevention/plenum/ | 16.06.2018 |
| Security and Prevention Committee | Wilhelms-hafen | Kriminalpräventiver Rat | https://lpr.sachsen-anhalt.de/fileadmin/Bibliothek/Politik_und_Verwaltung/MI/LPR/Inhalte_des_9_Landespraeventioestages/Herr_Le_wald.pdf | 20.06.2018 |
| Civil Protection Committee | Bonn | Beirat zum ehrenamtlichen Bevölkerungs- und Katastrophenschutz und der Feuerwehr | http://www2.bonn.de/bo_ris/ris_sql/agm_index.asp?e_register=0&e_content=3502&e_gre_id=220&e_p_id=10&e_gre_art=Gremien&e_caller=hbr_gremien_result | 20.04.2018 |
| Flood Protection Committee | Halle | Hochwasserschutzbeirat | http://www.halle.de/de/Verwaltung/Lebenslagen/Notfall/Hochwasser/ | 15.06.2018 |
| Health Committee | Frankfurt (Main) | Gesundheitskommission | https://frankfurt.de/sixcms/media.php/738/GO%20f%C3%BCr%20die%20vom%20Magistrat%20gebildeten%20Kommissionen%20Stand%202008.01.2018%29.pdf | 19.06.2018 |
| Funeral System Committee | Frankfurt (Main) | Kommission für das Friedhofs- und Bestattungswesen | https://frankfurt.de/sixcms/media.php/738/GO%20f%C3%BCr%20die%20vom%20Magistrat%20gebildeten%20Kommissionen%20Stand%202008.01.2018%29.pdf | 19.06.2018 |
| Health Committee | Munich | Gesundheitsbeirat | http://www.gesundheitsbeirat-muenchen.de/?page_id=167 | 08.07.2018 |

Table 20 Analyzed committees in the category “Education, Culture, Sports”

| Type | City | Committee name | Source | Date |
|-----------------------------|------------|--|---|------------|
| Academic Committee | Erfurt | Kommunaler Hochschul- und Studierendenbeirat | http://www.erfurt.de/mam/ef/rathaus/stadtrecht/4/4022.pdf | 13.06.2018 |
| Academic Committee | Weimar | Hochschul- und Studierendenbeirat | https://stadt.weimar.de/fileadmin/redaktion/Dokumente/buergerservices/ortsrecht/schule_kultur/41_10_SatzHochschul-StudBeirat.pdf | 19.06.2018 |
| Arts Committee | Bonn | Kunstkommission | http://www2.bonn.de/bo_ris/ris_sql/agm_index.asp?e_register=0&e_content=3502&e_gre_id=16&e_p_p_id=10&e_gre_art=Gremien&e_caller=hbr_gremien_result | 20.04.2018 |
| Arts Committee | Darmstadt | Kunstkommission | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Arts Committee | Flensburg | Kunstkommission | http://www.flensburg.de/PDF/Satzung_%C3%BCber_die_Kunstkommission_der_Stadt_Flensburg.PDF?ObjSvrID=2306&ObjID=344&ObjLa=1&Ext=PDF&WTR=1&_ts=1446794950 | 07.06.2018 |
| Arts Committee | Freiburg | Kunstkommission | https://www.freiburg.de/pb/site/Freiburg/get/documents_E-1397361497/freiburg/daten/ortsrecht/18%20Kultur/OrtsR_18_10.pdf | 19.06.2018 |
| Arts Committee | Ingolstadt | Kunstpreiskommission | https://www.ingolstadt.de/sessionnet/kp0040.php?__kgmr=41& | 11.06.2018 |
| Arts Committee | Kassel | Kunstbeirat | http://www.stadt-kassel.de/politik/beiraete/kunstbeirat/info/01880/index.html | 29.06.2018 |
| Arts Committee | Kiel | Kunstbeirat | https://www.kiel.de/de/politik_verwaltung/beiraete.php | 29.06.2018 |
| Arts Committee | Cologne | Kunstbeirat | https://www.stadt-koeln.de/mediaasset/content/pdf-rat-gremien/kunstbeirat/geschaeftsordnung_kunstbeirat_2014.pdf | 30.06.2018 |
| Arts Committee | Krefeld | Kunstbeirat | https://www.krefeld.de/c12574d40034948f/files/4.35-richtlinien_des_kunstbeirates_der_stadt_krefeld.pdf/\$file/4.35-richtlinien_des_kunstbeirates_der_stadt_krefeld.pdf?openelement | 13.06.2018 |
| Arts Committee | Mainz | Kunstbeirat | http://mainz.de/verwaltung-und-politik/beiraete-beauftragte/kunstbeirat.php | 03.07.2018 |
| Arts Committee | Rostock | Kunstbeirat | http://rathaus.rostock.de/sixcms/media.php/1566/GeschaeftsordnungKunstbeirat.pdf | 18.06.2018 |
| Arts Committee | Worms | Kunstbeirat | https://www.worms.de/de/kultur/kunst-und-musik/kunstbeirat.php | 21.06.2018 |
| Community College Committee | Suhl | Volkshochschulbeirat | https://www.suhltrift.de/component/option,com_docman/task,doc_download/Itemid,99999999/gid,255/ | 18.06.2018 |
| Culture Committee | Chemnitz | Kulturbeirat | http://session-bi.stadt-chemnitz.de/kp0040.php?__kgmr=759121& | 04.05.2018 |
| Culture Committee | Duisburg | Kulturbeirat | https://www2.duisburg.de/micro2/kulturbuero/foerderinfos/bereich1/bereich1.php | 09.07.2018 |
| Culture Committee | Eisenach | Kulturbeirat | https://www.eisenach.de/fileadmin/files_db/Buergerservice/Ortsrecht/41_00_01_-_Satzung_fuer_den_Kulturbeirat.pdf | 07.06.2018 |
| Culture Committee | Essen | Kulturbeirat | https://media.essen.de/media/wwwessende/aemter/15/sr0_19neu.pdf | 14.06.2018 |
| Culture Committee | Kassel | Kulturkommission | http://www.stadt-kassel.de/politik/kommissionen/kultur/ | 29.06.2018 |
| Culture Committee | Kiel | Kultur- und Wissenschaftssenat | https://www11.kiel.de/ortsrecht/root/download.php?typ=lf&fid=8dd93a85a3d7d413bedb6524bdf9b641 | 29.06.2018 |
| Culture Committee | Leipzig | Kulturrat | https://www.leipzig.de/fileadmin/mediendatenbank/leipzig-de/Stadt/02.4_Dez4_Kultur/20170901_GO-LKR.pdf | 30.06.2018 |
| Culture Committee | Offenbach | Kulturkommission | https://www.offenbach.de/medien/bindata/of/stadtrecht-allgemeine-verwaltung/1.031_Kommissionsordnung_in_der_Fassung_vom_07.06.2017.pdf | 27.06.2018 |
| Culture Committee | Regensburg | Kulturbeirat | https://www.regensburg.de/stadtrecht/233898/satzung-fuer-den-kulturbeirat-der-stadt-regensburg-kulturbeiratssatzung-vom-28-juli-1994.html | 16.06.2018 |
| Culture Committee | Wiesbaden | Kulturbeirat | http://www.wiesbaden.de/medien-zentral/dok/rathaus/stadtrecht/1_-_3.5_Kulturbeiratsordnung_Stand_2017_.pdf | 20.06.2018 |

| | | | | |
|--------------------------------|------------------------|----------------------------------|---|------------|
| Culture Committee | Würzburg | Kulturbeirat | https://www.wuerzburg.de/m_10781_dl | 21.06.2018 |
| Culture Committee | Hof | Kulturbeirat | https://www.stadt-hof.org/session/bi/kp0040.php?__kggrnr=9& | 25.08.2018 |
| Educational Committee | Darmstadt | Bildungsbeirat | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Educational Committee | Heilbronn | Bildungsbeirat | https://www.heilbronn.de/fileadmin/daten/stadtheilbronn/formulare/buerger_rathaus/stadtrecht/Stadtrecht-Startseite.pdf | 11.06.2018 |
| Educational Committee | Kassel | Schul- und Bildungskommission | http://www.stadt-kassel.de/politik/kommissionen/bildung/ | 29.06.2018 |
| Educational Committee | Mainz | Beirat für Weiterbildung | https://bi.mainz.de/kp0040.php?__kggrnr=69& | 03.07.2018 |
| Educational Committee | Würzburg | Bildungsbeirat | https://www.wuerzburg.de/themen/kultur-bildung-kulturangebot/schulverwaltung/schulentwicklung/strategische-schulentwicklung/416580.Wuerzburgs-Bildung-in-Bewegung---5.-Sitzung-des-Bildungsbeirats.html | 21.06.2018 |
| Municipal History Committee | Würzburg | Beirat für Stadtgeschichte | http://www.wuerzburg.sitzung-online.de/BI/au020.asp?AULFDNR=71&altoption=Gremium | 21.06.2018 |
| School Committee | Kassel | Schulkommission | http://www.serviceportal-kassel.de/cms05/satzungen/067113/index.html | 29.06.2018 |
| School Committee | Offenbach | Schulkommission | https://www.offenbach.de/medien/bindata/of/stadtrecht-allgemeine-verwaltung/1.031_Kommissionsordnung_in_der_Fassung_vom_07.06.2017.pdf | 27.06.2018 |
| School Committee | Stuttgart | Schulbeirat | https://www.stuttgart.de/item/show/305802/1/dept/113191? | 25.06.2018 |
| School Committee | Ulm | Schulbeirat | http://buergerinfo.ulm.de/kp0040.php?__kggrnr=8& | 06.06.2018 |
| School Committee | Hof | Schulbeirat | https://www.stadt-hof.org/session/bi/kp0040.php?__kggrnr=10& | 25.08.2018 |
| Sports Committee | Augsburg | Sportbeirat | https://ratsinfo.augsburg.de/bi/au010.asp?T1=Beir%E4te&AU=Beirat&SORTVON=10&SORTBIS=17 | 12.03.2018 |
| Sports Committee | Darmstadt | Magistratskommission Sport | https://da-bei.darmstadt.de/static/domain/2/Leitlinien_final.pdf | 22.05.2018 |
| Sports Committee | Erlangen | Sportbeirat | https://www.erlangen.de/Portaldata/1/Resources/110_stadtrecht/[1xx.xx]/189.00_i.d.F._vom_24.10.2014__Sportbeirat.pdf | 13.06.2018 |
| Sports Committee | Frankfurt (Main) | Sportkommission | https://frankfurt.de/sixcms/media.php/738/GO%20f%C3%BCr%20die%20vom%20Magistrat%20gebildeten%20Kommissionen%20Stand%2008.01.2018%29.pdf | 19.06.2018 |
| Sports Committee | Ingolstadt | Sportkommission | https://www.ingolstadt.de/media/custom/465_1262_1.PDF?1518514170 | 11.06.2018 |
| Sports Committee | Kassel | Sportkommission | http://www.stadt-kassel.de/politik/kommissionen/sport/ | 29.06.2018 |
| Sports Committee | Koblenz | Sportstättenbeirat | https://buergerinfo.koblenz.de/kp0040.php?__kggrnr=44& | 30.06.2018 |
| Sports Committee | Munich | Sportbeirat | https://www.muenchen.de/rathaus/Stadtrecht/vorschrift/26.pdf | 08.07.2018 |
| Sports Committee | Offenbach | Sportkommission | https://www.offenbach.de/medien/bindata/of/stadtrecht-allgemeine-verwaltung/1.031_Kommissionsordnung_in_der_Fassung_vom_07.06.2017.pdf | 27.06.2018 |
| Sports Committee | Regensburg | Sportbeirat | https://www.regensburg.de/rathaus/stadtpolitik/beiraete/sportbeirat | 16.06.2018 |
| Sports Committee | Speyer | Sportstättenbeirat | https://www.speyer.de/sv_speyer/mobile/de/Rathaus/Stadtrat/Sitzverteilung/ausschussverzeichnis_gesamt.pdf | 25.06.2018 |
| Sports Committee | Weiden (Oberpfalz). | Sportbeirat | https://www.stadtrecht.weiden.de/SANH1B.pdf | 06.06.2018 |
| Sports Committee | Würzburg | Sportbeirat | https://www.wuerzburg.de/m_10784_dl | 21.06.2018 |
| Sports Committee | Hof | Sportbeirat | https://www.stadt-hof.org/session/bi/kp0040.php?__kggrnr=11& | 25.08.2018 |

Table 21 Analyzed committees in the category “Economy”

| Type | City | Committee name | Source | Date |
|-----------------------------|--------------------------|--------------------------|--|------------|
| City Center Committee | Augsburg | City Center Committee | https://ratsinfo.augsburg.de/bi/au010.asp?T1=Beir%E4te&AU=Beirat&SORTVON=10&SORTBIS=13 | 12.03.2018 |
| City Center Committee | Neustadt (Weinstraße) | City Center Committee | https://www.neustadt.eu/output/download.php?fid=2579.52.1..PDF&fn=0_15_Innenstadtbeirat | 28.06.2018 |
| City Marketing Committee | Neumuenster | City Marketing Committee | https://city-nms.de/stadtmarketing/stadtmarketingbeirat.html | 21.06.2018 |
| Economy Committee | Dessau- Roßlau | Economy Committee | https://verwaltung.dessau-rosslau.de/fileadmin/Verwaltungsportal_Dessau-Rosslau/Stadt_Buerger/Buergerservice/Stadtrecht/wirtschaftsbeirat_2015.pdf | 08.07.2018 |
| Economy Committee | Frankfurt (Oder) | Economy Committee | https://www.frankfurt-oder.de/index.php?object=tx%7c2616.14&ModID=255&FID=2616.6969.1 | 19.06.2018 |
| Economy Committee | Jena | Economy Committee | https://www.jena.de/fm/41/Beirat%20des%20Eigenbetriebes%20Jenarbeit.pdf | 13.06.2018 |
| Economy Committee | Schwabach | Economy Committee | http://schwabach.de/de/politik/beiraete/wirtschaftsbeirat.html | 23.06.2018 |
| Economy Committee | Suhl | Economy Committee | https://www.suhltrift.de/component/option,com_docman/task,doc_download/Itemid,99999999/gid,255/ | 18.06.2018 |
| Economy Committee | Weiden (Oberpfalz) | Economy Committee | https://www.stadtrecht.weiden.de/SANH1B.pdf | 06.06.2018 |
| Economy Committee | Würzburg | Economy Committee | https://www.wuerzburg.de/m_10831_dl | 21.06.2018 |
| Funfair Committee | Augsburg | Funfair Committee | https://ratsinfo.augsburg.de/bi/au010.asp?T1=Beir%E4te&AU=Beirat&SORTVON=10&SORTBIS=20 | 12.03.2018 |
| Industry Committee | Frankfurt (Oder) | Industry Committee | https://www.frankfurt-oder.de/?object=tx%7c2616.14&ModID=255&FID=2616.6036.1 | 19.06.2018 |
| Industry Committee | Frankfurt (Main) | Industry Committee | https://frankfurt.de/sixcms/media.php/738/Jahresbericht-2015-der-Wirtschafts%C3%B6rderung-Frankfurt-GmbH.pdf | 19.06.2018 |
| Marketplace Committee | Augsburg | Marketplace Committee | https://ratsinfo.augsburg.de/bi/au010.asp?T1=Beir%E4te&AU=Beirat&SORTVON=10&SORTBIS=15 | 12.03.2018 |
| Marketplace Committee | Delmenhorst | Marketplace Committee | http://www.sitzungsdienst-delmenhorst.de/bi/au010.asp?T1=Beir%E4te&AU=Beir%E4te&SORTVON=501&SORTBIS=510&SELECT=1 https://www.speyer.de/sv_speyer/mobile/de/Rathaus/Stadtrat/Sitzverteilung/ausschussverzeichnis_gesamt.pdf | 22.05.2018 |
| Tourism Committee | Speyer | Tourism Committee | https://www.speyer.de/sv_speyer/mobile/de/Rathaus/Stadtrat/Sitzverteilung/ausschussverzeichnis_gesamt.pdf | 25.06.2018 |
| Tourism Committee | Weiden (Oberpfalz) | Tourism Committee | https://www.stadtrecht.weiden.de/SANH1B.pdf | 06.06.2018 |
| Energy Committee | Aachen | Energiebeirat | http://www.aachen.de/DE/stadt_buerger/energie/klimaschutz_in_aachen/index.html | 08.03.2018 |
| Energy Committee | Landshut | Energieforum | https://www.idowa.de/inhalt.landshut-energieforum-danke-das-war-s.fc92c64a-ee82-4909-aeae-0ecdd07a25fb.html | 06.06.2018 |
| Marketplace Committee | Hof | Marktbeirat | https://www.stadt-hof.org/session/bi/kp0040.php?__kgnr=14& | 25.08.2018 |
| Economy Committee | Hof | Wirtschaftsbeirat | https://www.stadt-hof.org/session/bi/kp0040.php?__kgnr=16& | 25.08.2018 |

Appendix B.4: Bridging-Actors-function for Paper 3

The network analysis was conducted using Python programming language. This function was developed to identify bridging actions.

```
#####  
##  
## Python function for identifying bridging actors ##  
## developed for Paper 3 ##  
## ##  
#####  
  
import networkx as nx # a library for conducting social network analysis  
from networkx.algorithms import bipartite # for analyzing bipartite network sets  
  
def bridging_actors (G, E, node=None):  
    """  
    This function creates a set of actors, which are connecting points between  
    two ECAs (i.e., municipal advisory committees).  
  
    Prerequisite is a bipartite graph, with two connected partitions (actors,  
    ECAs).  
  
    The argument G is the original bipartite graph. The argument E is the  
    projected unipartite graph containing the ECA-nodes.  
  
    The optional argument „node“ specifies an ECA. If set, the function  
    calculates the bridging actors between this ECA and all other ECAs.  
  
    If there is no optional argument "node", the function calculates all  
    bridging actors between all ECAs in the set.  
    """  
  
    e = list(set(E.nodes())) # a list of the ECAs  
    ba_list = [] # creating an empty list for storing the bridging actors  
    a = 0 # counter  
  
    # If there is an optional argument:  
  
    if node:  
        # Iterating over the neighbors of node and identifying the bridging actors  
        for n in e:  
            bridg_act =  
                list(set(G.neighbors(node)).intersection(G.neighbors(e[a])))  
            ba_list = ba_list + bridg_act # adding bridging actors to the list  
            a = a+1  
  
        # Removing the nodes which result from the intersection of the node's set  
        # with itself  
        remlist = list(G.neighbors(node))  
        for n in remlist:  
            ba_list.remove(n)  
  
    # If there is no optional argument:  
    else:  
        # Iterating over all ECAs and identifying the shared actors, including the  
        # intersections of the respective nodes with itself  
        for n in e:  
            b = 0 # counter  
            ba = [] # creating an empty list for storing bridging actors  
  
            for i in e:  
                bridg_act =  
                    list(set(G.neighbors(e[a])).intersection(G.neighbors(e[b])))  
                ba = ba + bridg_act  
                b = b + 1
```

```

        ba_list = ba_list + ba
        a = a + 1

# Deleting the intersections of the nodes with itself
f = 0 # counter
r = [] # creating an empty list for nodes to remove

# Identifying the nodes to remove
for n in e:
    rem = list(G.neighbors(e[f])) # node to remove
    r = r + rem
    f = f + 1

# Deleting the nodes from the bridging_actors-list
for n in r:
    ba_list.remove(n)

return set(ba_list)

```

Appendix B.5: Poster Presentation



Institutionalisierung von Klimaschutz und Klimaanpassung in Würzburg Darstellung anhand des Modells der „Adaptation Institutionalization“

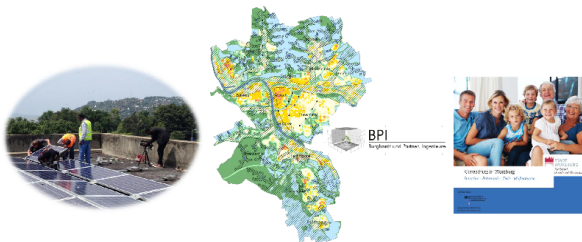
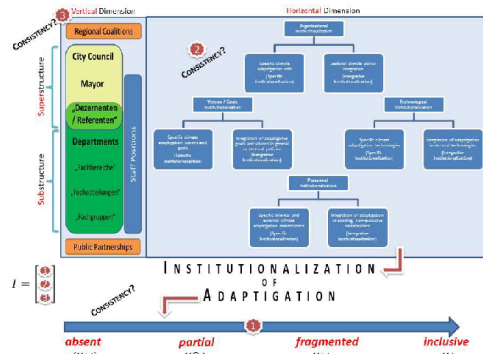
Christian Göpfert, M.Sc

Adaptation Institutionalization – Ein Modell zur systematischen Erfassung und Bewertung der Institutionalisierung von Klimaschutz und Klimaanpassung in deutschen Kreisfreien Städten

Bei der Analyse der Institutionalisierung von Klimaschutz und Klimaanpassung werden folgende vier Organisationselemente als heuristische Basis herangezogen und sowohl hinsichtlich der hierarchischen Einordnung (vertikale Dimension), der thematischen Verankerung (horizontale Dimension) bewertet:

- Organisationsstruktur:** Wo und wie ist Klimaschutz und Klimaanpassung in der Verwaltung verankert? Existiert ein Amt oder eine Stabsstelle, welche sich exklusiv und spezifisch hierfür eingerichtet wurde oder ist der Themenkomplex integriert in bereits bestehenden Dienststellen, wie beispielsweise im Stadtplanungsamt?
- Leitbilder / Ziele:** Existieren spezifische quantitative wie qualitative Zielsetzungen in den Bereichen Klimaschutz und Klimaanpassung oder sind implizite Ziele in anderen sektoralen Konzepten oder Leitbildern integriert?
- Akteure:** Welche Stakeholder sind im Klimaschutz und der Klimaanpassung aktiv? Existiert bspw. speziell für diese Aufgaben betrautes Personal innerhalb der Verwaltung oder ist ein interdisziplinäres Beratungsgremium eingerichtet worden, welches auch Vertreter von Institutionen außerhalb der Stadtverwaltung enthält?
- Technologie:** Welche thematischen Konzepte oder Maßnahmenkataloge liegen vor? Sind Klimaschutz und Klimaanpassung integriert in bestehende Verwaltungsabläufe (wie bspw. in der Bauleitplanung)? Existieren spezielle thematische Instrumente und Maßnahmen / Projekte?

Wesentlich bei der Bewertung dieser vier Organisationselemente hinsichtlich der Institutionalisierung ist der zudem der Grad an integrativ-synergetischer Verankerung der Themenfelder Klimaschutz und Klimaanpassung (Adaptation): Sind beispielsweise beide Themenfelder in einer spezifischen Dienststelle verankert („inclusive“), oder sind diese unabhängig voneinander institutionalisiert („fragmented“). Oder befasst sich die Kommune beispielsweise nur mit dem Aspekt des Klimaschutzes („partial“)? Abschließend dient das Modell auch dazu, zu untersuchen, inwieweit die Institutionalisierung in einer Kommune hinsichtlich der vier Organisationselemente konsistent ist.



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Die Institutionalisierung von Klimaschutz und Klimaanpassung in der Stadt Würzburg (Kurzüberblick)

- Organisationsstruktur:** Seit 2009 befasst sich eine speziell für die Aufgaben des Klimaschutzes und der Klimaanpassung eingerichtete Stabsstelle **inklusiv** mit dem vielfältigen **Themenspektrum**. Zudem wurde im Jahr 2015 ein Energie- und Klimazentrum eingerichtet, welches u.a. als Beratungseinrichtung den Kontakt zu Bürgerinnen und Bürgern, Unternehmen und Vereinen pflegt.

Handlungsfelder: Überblick



- Leitbilder und Ziele:** Im Jahr 2009 hat sich die Stadt Würzburg das Ziel gesetzt, ihre CO₂-Emissionen bis zum Jahr 2020 gegenüber der Basis 1990 zu halbieren. Im Jahr 2014 wurde bereits eine gesamtstädtische Reduktion von ca. 38 % erreicht. Zudem wurden Leitbilder und Ziele für ein klimagerechtes Würzburg im Jahr 2030 in breiter Akteurspartizipation aufgestellt, welches ambitionierte Vorgaben für den Klimaschutz und in Grundzügen auch die Klimaanpassung enthält. Auch hinsichtlich dieses Organisationselements lässt sich zumindest eine **fragmentierte** Institutionalisierung feststellen.



- Akteure:** In der Stadtverwaltung sind derzeit 3,5 Personalstellen spezifisch und **inklusiv** mit den Themenfeldern Klimaschutz und Klimaanpassung betraut. Darüber hinaus existiert ein Klimabeirat, welcher als beratendes Gremium Akteure aus Stadtrat, Verwaltung, Wissenschaft, Wirtschaft und thematischen Verbänden vereint, und sich ebenso **inklusiv** mit beiden Themenstellungen befasst.



- Technologie:** Die Stadt Würzburg verfügt über etliche spezifische Konzeptarbeiten aus beiden Themenfeldern (Klimaschutzkonzept, energetische Quartierskonzepte, Klimafunktionskarte). In den letzten Jahren wurden etliche und alle thematische Sektoren (siehe Themenspektrum) betreffende Maßnahmen und Projekte umgesetzt, auch weit über Stadtgrenzen hinaus (wie bspw. die Projekte im Rahmen der kommunalen Klimapartnerschaft mit Mwanza, Tanzania). Darüber hinaus wird derzeit das aktiv Ziel verfolgt, die Aspekte der Klimaanpassung systematisch in die Bauleitplanung zu integrieren. Insgesamt kann auch hier festgehalten werden, dass zumindest eine **fragmentierte** Institutionalisierung vorliegt.

Abschließend lässt sich festhalten, dass die Institutionalisierung von Klimaschutz und Klimaanpassung in Würzburg im Vergleich der vier Organisationselemente inhaltlich konsistent ist.