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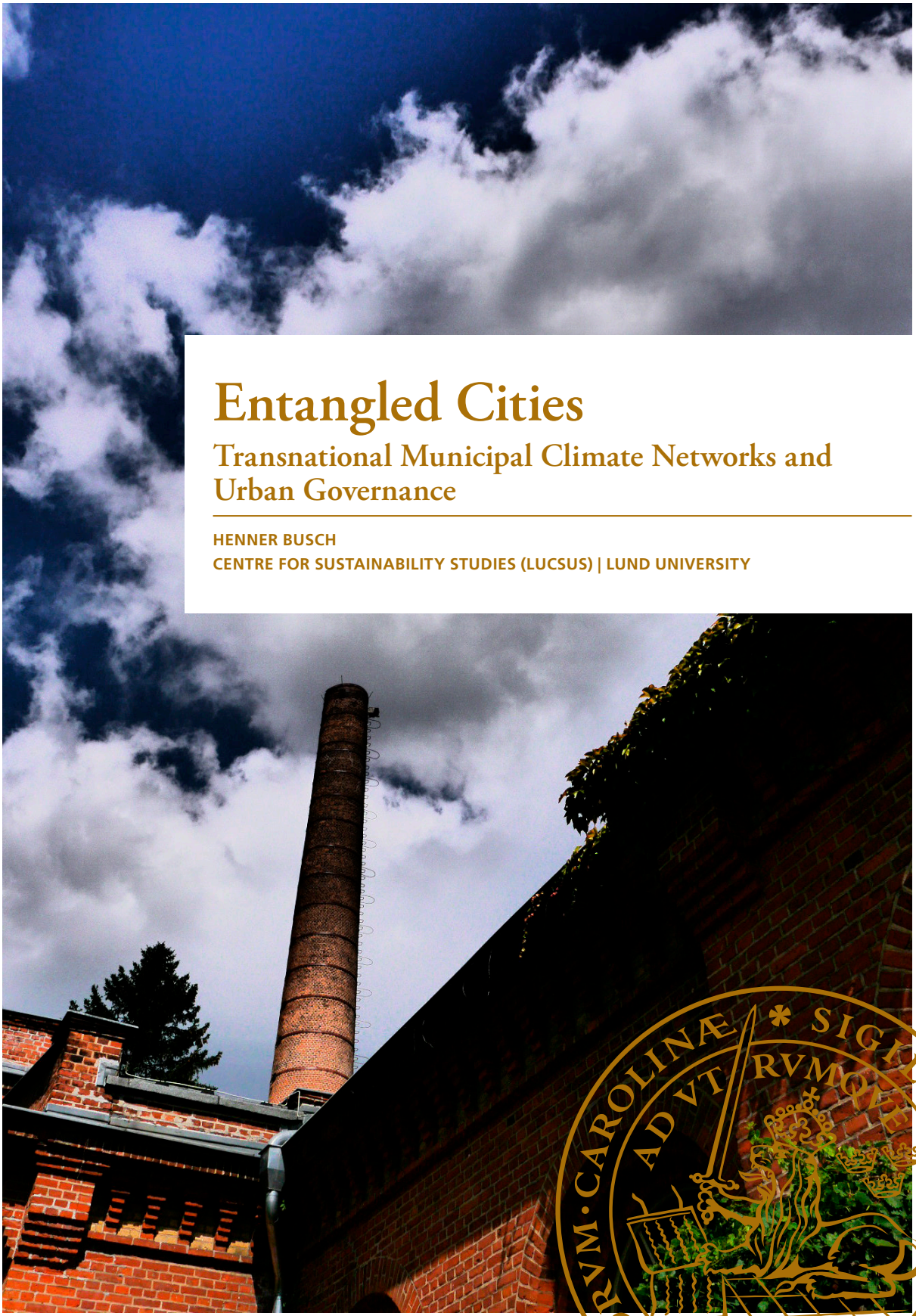

Entangled Cities

Transnational Municipal Climate Networks and Urban Governance

HENNER BUSCH
CENTRE FOR SUSTAINABILITY STUDIES (LUCSUS) | LUND UNIVERSITY

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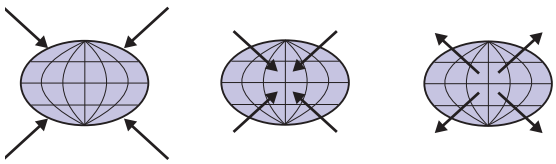
Integration of Social and Natural Dimensions of Sustainability



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Entangled Cities

Entangled Cities

Transnational Municipal Climate Networks and Urban Governance

Henner Busch

LUND UNIVERSITY

DOCTORAL DISSERTATION
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To be defended at Ostrom, Josephson, Lund. 28th of October 2016 at 10:15

Faculty opponent

Professor James Evans
School of Environment, Education and Development, University of Manchester, Great Britain

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Entangled Cities: Transnational Municipal Climate Networks and Urban Governance

Abstract

This thesis investigates the influence of transnational municipal climate networks (TMCNs) on urban climate governance in Germany. The reality of climate change means that cities all over the world are faced with two challenges. First, they need to go through decarbonisation transitions to mitigate climate change. Second, they need to adapt to the conditions of a changing climate. The growth of cities world-wide means that cities both constitute increasingly important hubs of carbon and material flows, and face increasing climate risk. This means that cities have to address both climate change mitigation and adaptation needs, while offering economies of scale for these measures.

During recent decades, a number of TMCNs have emerged. These networks aim to improve the governance of climate change related issues in their member municipalities. Many German cities and municipalities have joined these networks, and today more than half of the German population (44 million people) lives in municipalities that are members of at least one of these networks. Despite the wide proliferation of TMCNs, research on their impact has remained unsystematic, and important aspects of their impact have been neglected by existing research.

This thesis aims to close this research gap by tackling the impact of TMCNs on urban climate governance in a systematic manner through a variety of methods (including a survey, interviews, field visits, observations, literature and webpage analyses). My research focuses on the local level of climate governance, in particular on the perspective of urban climate managers, because they are key actors who link local climate governance to TMCNs. This perspective has been neglected thus far by research on TMCNs.

My results show that urban climate managers use their city's membership in TMCNs mostly for fostering internal governance of climate issues. Specifically, membership in TMCNs is used by climate managers to support internal mobilisation on climate policies, to formulate emission reduction goals, and to institutionalise climate trajectories by, for example, creating new positions in the administration. Interaction between the local and the network level, such as project support provided by the networks, is seen as relevant but less important than previously expected. In addition, in sharp contrast to research findings in other contexts, actors in German cities seldom use the city's memberships in these networks for green city branding purposes. Another important finding is that the interests of actors in member cities can differ significantly from staff of TMCNs, which might be due to funding issues. Networks have to rely on external funding (e.g., from the European Union or national funding schemes) to maintain their staff and infrastructure, and thus the expectations of actors in cities are sometimes not met, as is the case of the Covenant of Mayors.

By shifting the perspective to the local (or operational) governance level I am able to draw attention to impacts of TMCNs which so far have been overlooked. Based on my results, I argue that research in the field of TMCNs needs to pay more attention to internal processes at the local level of climate governance, including political struggles and contestations, else we risk missing important impacts of these networks on urban climate governance.

Transnational municipal climate networks, urban climate governance, mitigation, adaptation

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Entangled Cities

Transnational Municipal Climate Networks and Urban Governance

Henner Busch

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To whom it may concern

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Abstract

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Abstract in German

Diese Arbeit untersucht die potentielle Rolle transnationaler kommunaler Klimanetzwerke und ihren Einfluss auf lokale Klimapolitik in deutschen Städten. Durch die Folgen des Klimawandels stehen Städte weltweit vor zwei Herausforderungen. Sie müssen erstens Dekarbonisierungsprozesse durchlaufen, um ihren Beitrag zum Klimaschutz zu leisten. Zweitens müssen sie sich an ein verändertes Klima anpassen. Das anhaltende Wachstum von Städten weltweit vergrößert urbane Klimarisiken und macht Städte zu wichtigen Knotenpunkten von Emissionen und Ressourcen. In der Folge müssen in Städte sowohl Klimaschutz als auch Klimaanpassung vorangetrieben werden. Gleichzeitig bieten Städte durch ihre Größe die Möglichkeit Skaleneffekte auszunutzen und so Maßnahmen effizienter umzusetzen.

In den letzten 25 Jahren hat sich eine Reihe von transnationalen kommunalen Klimanetzwerken etabliert. Das Ziel dieser Netzwerke ist es die Klimaarbeit in ihren Mitgliedskommunen zu verbessern. Viele Städte und Gemeinden in Deutschland haben sich diesen Netzwerken angeschlossen, mit dem Ergebnis, dass heutzutage mehr als die Hälfte der deutschen Bevölkerung (44 Mio.) in Gemeinden leben, die Mitglied in mindestens einem der Netzwerke sind. Trotz der weiten Verbreitung dieser Netzwerke sind wichtige Aspekte, wie zum Beispiel der direkte Einfluss auf lokale Klimapolitik, bisher unerforscht geblieben.

Diese Arbeit hat den Anspruch diese Forschungslücke zu schließen und den Einfluss der Netzwerke durch eine systematische Untersuchung und eine Reihe unterschiedlicher Forschungsmethoden zu untersuchen (Umfrage, Interviews, Beobachtungen, Ortsbesuche, Analyse von Literatur und Internetseiten). Dabei wird die lokale Perspektive angenommen, im Besonderen die Sichtweise der lokalen Klimamanager. Diese Perspektive ist bisher in der Forschung zu transnationalen kommunalen Klimanetzwerken vernachlässigt worden.

Meine Ergebnisse zeigen, dass Klimamanager in deutschen Städten die Mitgliedschaft in den Netzwerken vor allem dafür nutzen, Klimapolitik in stadtinternen Prozessen voranzutreiben. Dies geschieht vor allem durch interne Mobilisierung, das Formulieren von Emissionszielen, und durch die Verstetigung der städtischen Klimaarbeit, zum Beispiel durch die Schaffung neuer Stellen in der Verwaltung. Interaktion zwischen dem kommunalen und dem Netzwerklevel, wie zum Bespiel Projektberatung seitens der Netzwerke, sind zwar relevant, werden von Klimamanagern aber als weniger wichtig wahrgenommen. Im Gegensatz zu anderen Ländern engagieren sich Akteure in deutschen Städten nur wenig in der Vermarktung von erfolgreicher Klimaarbeit. Meine Ergebnisse zeigen außerdem, dass die Interessen von Akteuren in Mitgliedstädten und Mitarbeitern der Netzwerke nicht immer deckungsgleich sind. Dies liegt vor allem daran, dass die

Netzwerke auf externe Finanzierung angewiesen sind (zum Beispiele durch EU oder nationale Gelder) um Mitarbeiter und Infrastruktur finanzieren zu können.
Dadurch, dass ich den Fokus auf das lokal Level gelegt habe, bin ich in der Lage Aufmerksamkeit auf Einflüsse dieser Netzwerke zu lenken, die in der Forschung bisher übersehen wurden. Auf der Grundlage dieser Ergebnisse behaupte ich, dass die Forschung im Zusammenhang mit transnationalen kommunalen Klimanetzwerken ein neues Verständnis von Städten entwickeln muss. Städte dürfen bei der Analyse dieser Netzwerke nicht mehr als Akteure mit in sich schlüssigen Entscheidungen verstanden werden, sondern als Arenen politischen Konflikts. Andernfalls laufen wir Gefahr die wichtigsten Einflüsse dieser Netzwerke auf städtische Klimapolitik zu übersehen.

Preface

Like many theses this one started with a mystery. During the research for my master's thesis, I found that outstanding renewable energy projects in rural municipalities in Brandenburg, Germany were not motivated by concerns over climate change or climate protection considerations. This came as a surprise to me, since renewable energies are so often propagated as a viable measure for climate change mitigation. So in a way, I wanted to continue looking for ways in which climate change translates into action by local actors. Where are the people who are concerned about climate change and thus take up the difficult task of translating their concerns into local action?

This question marked the starting point of this thesis project on TMCNs. My reasoning behind choosing this topic was that joining a voluntary network set up in response to climate change was most probably an indicator for genuine concern about climate change. In the course of the five years of this PhD, and by encountering the complexity of the topic at hand, I moved away from this focus without ever having fully abandoned it. Instead, I turned towards looking at how said networks are used in local climate governance. Upon having gained an overview of the literature surrounding TMCNs, I was left with a sense of frustration[1]. A lot of smart and interesting things had been said about these networks but what was out there was not fully satisfying, and I had the feeling that much remained to be explored. This thesis is my attempt to address this frustration to some degree, by closing some of the holes and solving some of the "mysteries" that were left in the body of literature on this topic. But it is also a quest for identifying and acknowledging those that have been engaged in issues of climate change from early on. Many of the people I encountered during my research are driven by genuine idealism fuelled by a concern for the environment and following generations. Alas, this idealism is seldom praised. With this thesis I do not only attempt to attain an academic title which I can add to my business cards or my door plate, should I feel the urge to do so. I also want to extend a heartfelt "thank you!" to all those climate managers whose work has so much more impact on addressing climate change than my articles do. Thank you for your hard work, thank you for your idealism and thank you for taking some time to help out a PhD student who had no clue what he was doing when he attempted to interview you.

[1] This feeling is maybe comparable to the feeling of having eaten a five course menu at a fancy restaurant that runs out of desert just as you go to order it.

Acknowledgements

There is this famous saying. It goes something like: “behind every great woman is a man who does the dishes”. If we ignore the heteronormativity of this saying for a moment, we come to understand the actual message. Great deeds are not done by one person alone. Everybody needs a support system. In the context of my PhD this message should probably read something like: “behind every mediocre PhD candidate, there are a lot of people who help her/him to deal with her/his imposter syndrome”. These people deserve my heartfelt thanks for their support during the past five years.

I would like to start by thanking my family. I thank my parents for a) producing me in the first place and b) letting me move to where the Vikings live without asking too many questions. I interpreted this behaviour as general trust into my ability to not totally screw up my life. In addition, I thank my father for the protestant work ethics I inherited. Not that they turn into boundless fun, but I do get shite done. This particular thesis would never ever have been possible without my mother. Only by passing on her family’s colour-blindness, I could dodge the fate of becoming the third art historian in a row after my father and grandfather. I might jeopardise my share of the due inheritance by saying this, but I think a thesis on urban climate governance might be a tad more relevant these days than a thesis which focusses on “Reconstructing the Ritual Ring-dance in the *Gospel of the Savior*” (found on the webpage of the Art History department of Stanford University[2]). Another great thing I inherited from my mother is the ability to listen (aka the ability to make people talk about the most private stuff without them noticing) – a skill that makes it easy to acquire the title “Everybody’s Darling” quickly and efficiently. I have to thank my sister. Her act of pulling me off that Bobby CAR in the tender age of two, probably was the formative moment that turned me into an environmentalist. The three of you are quite alright and I am not in Sweden to avoid you. I also promise to come over more often in the coming months.

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[2] I am sorry, Erik Yingling, whoever you may be.

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friend. Elina, thank you for helping me to “finish-on-time”. Lissy, damnit woman, get your act together and come back! A big “thank you” to the others in that PhD batch: Anna, Andreas, Cheryl, Eric B, Eric J, Giovanni and Henrik. To those that came after us: Thank you for enduring your endless “wisdom” and “good” advice. Special thanks to Ellinor for acting as my emotional trash can. In the last months, you saved me from insanity. Ebba and Emma, you are the best party people! Thank you, Altaaf, Chad, David H, David O’B, Helena, Mads, Sanna, Sarah and Stephen. All of you are beautiful human beings.

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List of Abbreviations

CCP	Cities for Climate Protection Programme
CO_2	Carbon Dioxide
COP	Conference of the Parties
EEG	Erneuerbare Energien Gesetz (Renewable Energy Law)
EU	European Union
GHG	Greenhouse Gas
ICLEI	International Council for Local Environmental Initiatives
IPCC	Intergovernmental Panel on Climate Change
TMCN	Transnational Municipal Climate Network
UK	United Kingdom of Great Britain and Northern Ireland
UNFCCC	United Nation Framework Convention on Climate Change
UNISDR	United Nations International Strategy for Disaster Reduction

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List of Articles

Main Articles

I. Busch, H. (2015) Linked for Action? An Analysis of Transnational Municipal Climate Networks in Germany, *International Journal of Urban Sustainable Development,* 7:2, 213-231

II. Busch, H., Anderberg, S. (2015) Green Attraction - Transnational Municipal Climate Networks and Green City Branding, *Journal of Management and Sustainability,* 5:4, 1-16

III. Fenton, P., Busch, H. (2016) Identifying the "Usual Suspects" - Assessing Patterns of Representation in ICLEI Case Study Collections, *Challenges in Sustainability,* 4:2, 1-14

IV. Busch, H., Bendlin, L., Fenton, P. Shaping Local Responses - Transnational Municipal Climate Networks and Local Climate Governance; manuscript submitted to a peer-reviewed journal

Related Articles and Publications

Kunze, C., Busch, H. (2011) The Social Complexity of Renewable Energy Production in the Countryside, *Electronic Green Journal*, 31:1, 1-18

Busch, H., McCormick, K. (2014) Local power: Exploring the Motivations of Mayors and Key Success Factors for Local Municipalities to go 100% Renewable Energy, *Energy, Sustainability and Society,* 4:1, 1-15

Islar, M., Busch, H. (2016) "We are not in this to save the Polar Bears!" - The Link between Community Renewable Energy Development and Ecological Citizenship, *Innovation: The European Journal of Social Science Research*, 29:3, 303-319

Introduction

Cities and Climate Change

There is scientific consensus that climate change is real and that it is caused by human activities (Doran & Zimmerman, 2009; IPCC, 2007, 2014; Oreskes, 2004; Stewart, Cohen, & Pratchett, 2013). Projections provided by the International Panel on Climate Change (IPCC) have underlined the need for decisive action. They describe climate change as a global threat, endangering the lives of millions and challenging economic practices world-wide (IPCC, 2007, 2014).

The outcomes of the Conferences of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) have long proved insufficient to address the actual need for climate change mitigation and adaptation (Banerjee, 2012; D. Campbell, 2013). The 2015 Paris Agreement was generally received as an important breakthrough, but it is far too early to tell if the public promises and ambitions will indeed lead to the emission reductions necessary to limit global warming to the proclaimed 1.5 degrees. So far, the voluntary emission reduction pledges are far below necessary levels (Fawcett et al., 2015).

This situation has led to two main consequences: Firstly, as the international community of nation states has been unable to adequately address the issue, other actors have taken action to address the threat of severe climate change (Dimitrov, 2010). Secondly, the delay of climate change mitigation measures has increased needs for adaptation measures (Stern, 2009). In this context, urban areas are of growing importance globally. According to UN estimates (United Nations Department of Economic and Social Affairs/Population Division, 2012), in 2011, more than half of the world's population –3.6 out of 7.0 billion people – lived in urban areas. Cities provide far more than just living space for people. With their dense infrastructure, they offer a wide array of services and resources, and constitute accumulations of economic values, and material and carbon flows (Anderberg, 2012; Bulkeley, Castán Broto, Hodson, & Marvin, 2013; Valencia, 2016; Wamsler, 2014). These characteristics open up the possibility of tapping into economies of scale of climate change mitigation and adaptation measures, as spatially limited measures can affect a greater number of users of the urban infrastructure (Dodman, 2009; Kamal-Chaoui & Roberts, 2009).

Cities must urgently seek answers for how to adapt to climate change in order to protect inhabitants, and economic and cultural values, as well as how to contribute to climate change mitigation in order reduce the impact of climate change. Cities have to adapt to new weather patterns, including higher mean temperatures, which are aggravated due to the urban heat island effect (Andrews, 2008; IPCC, 2014; Kamal-Chaoui & Roberts, 2009; Maria, Rahman, & Collins, 2013), and sea-level rise (Wilbanks et al., 2003). Further, cities must adapt to increased risks from extreme weather events such as floods, heat-waves and windstorms, which a less stable climate will bring about (IPCC, 2012, 2014; Wamsler, Brink, & Rivera, 2013). The "uncertainty about the sorts of risk that might be experienced" (Bulkeley, 2013, p 142ff) makes urban adaption to climate change immensely difficult.

When it comes to climate change mitigation, urban areas account for a considerable share of global greenhouse gas (GHG) emissions. Estimates of their share have been up to 80%, though some argue that these may be overstated (Satterthwaite, 2008). While the exact numbers are not of upmost importance for this thesis, it is important to name the major sources of emissions of cities. These are energy, transport, waste, the building sector, and land-use changes (UN-Habitat, 2011). So due to the concentration of practices of "production and consumption cities have a massive environmental footprint and are inevitably a major cause of global change" (J Gupta, Pfeffer, Ros-Tonen, & Verrest, 2015, p.9). The density of urban areas also means opportunities for economies of scale and higher resource efficiency via public transportation and district heating, for example. As a consequence, per capita emissions in industrialised countries are often higher in rural areas when compared with urban areas (Andrews, 2008). Cities are also cultural and administrative centres for the hinterland, and as such often act as examples. Cases of successful transitions to low-carbon cities can thus be important, not only because of the de-facto emission reduction, but also because of their impact on practices outside of the cities' borders (Kronsell, 2013; Ostrom, 2014).

To summarise, cities constitute leverage points in terms of climate change mitigation, offering economies of scale if transitions are to be initiated there (Kamal-Chaoui & Roberts, 2009). They are also faced with great challenges in regards to climate change adaptation. This situation underlines the need for cities to improve urban climate governance to effectively address climate change.

Transnational Municipal Climate Networks (TMCNs)

The governance of global environmental problems, and climate change in particular, is a complex and complicated task. Originally, this governance role was filled by nation states, as in the successful case of the Montreal Protocol (Moolna, 2012). However, climate change, like many other sustainability problems, has not been met by an adequate intergovernmental response. In fact, the failure of the 2009 Copenhagen Conference of the Parties (COP 15) (Dimitrov, 2010) heralded an era where climate governance has been decentralised and uncoordinated (Abbott, 2012). Scholars have begged the question if the 2015 Paris Agreement will change these prevailing qualities of international climate governance (Fawcett et al., 2015).

Not surprisingly, new actors have emerged on the global stage to address gaps in global governance. These include cities or regions which attend COP negotiations (Acuto, 2013a, 2013b; Fraundorfer, 2016; Schroeder & Lovell, 2012), as well as networks of cities. These networks have formed around cross-border regions, like the case of the Union of the Baltic Cities (Busch, 2015; Kern & Bulkeley, 2009), and around specific topics, like the International Council for Local Environmental Initiatives - Local Governments for Sustainability (ICLEI) (Schreurs, 2008).

Several of these networks were explicitly set up in response to climate change. These so-called TMCNs have members in different countries; their members are mostly cities and municipalities (some accept other actors such as regional energy agencies or counties); they are non-hierarchical and membership is voluntary (Kern & Bulkeley, 2009). Initially, most of the TMCNs focussed on climate change mitigation while excluding climate change adaptation. A first group of climate change mitigation networks was founded in the early 1990s. These initiatives were characterised by what Bulkeley calls “municipal voluntarism” (Bulkeley, 2013, p. 76), which aimed at building capacities to mitigate climate change among city staff. In the last decade, new networks have emerged that focus on climate change adaptation (Busch, 2015). An example is the United Nations Office for Disaster Risk Reduction (UNISDR) effort, the Making Cities Resilient Campaign (below Resilient Cities). In addition, several established climate change mitigation networks such as Climate Alliance or ICLEI’s Cities for Climate Protection Programme (CCP) expanded their portfolio by including adaptation. And in March 2014 the Covenant of Mayors - a European climate change mitigation network - established its adaptation spin-off: the "Mayors Adapt" initiative. Europe has seen a particularly significant surge in TMCN memberships, with several of the largest networks originating in Europe (Kern & Bulkeley, 2009).

This short overview shows that TMCNs can be quite diverse in character. It can be argued that TMCNs have contributed to global climate governance by filling an 'undergoverned' field with patches of governance through addressing urban climate change issues (J Gupta et al., 2015). Scholars from international relations refer to this process as fragmentation (Abbott, 2012). For the urban setting this means that a "mesh-like set of structures" (Bulkeley, Castán Broto, & Edwards, 2015, p. 12) has emerged which builds the frame for cities' governance of climate change.

Despite a growing body of literature on TMCNs there are only few studies that have addressed how these networks influence local climate governance. A thorough literature review has shown that so far research on TMCNs has paid little attention to the internal processes of how membership is used in municipalities to influence climate governance on the ground, and if this issue has been taken up, it usually involves a rather small sample (e.g., Davies, 2005). Systematic investigations of a larger group of members, however, have so far remained overly simplified (e.g., Hakelberg, 2014). This thesis aims to close this research gap by investigating the case of Germany, the country in the European Union (EU) with the most inhabitants, the biggest economy and the most GHG emissions.

Research Purpose and Scope

The purpose of this thesis is to increase understanding of how membership in TMCNs is used by actors in cities. The main focus is on the impacts on urban climate governance but other uses, especially green city branding, are also considered. In order to show how the different usages of membership play out in local climate governance, I emphasise and focus on the city administration and its actors (mainly climate managers) rather than the TMCNs.

Main Research Question

Through this approach, I aim to answer the overarching research question:

How does cities' membership in TMCNs influence urban climate governance?

Sub-Research Questions

The overarching research question is operationalised through the following sub-research questions:

1. What aspects of local climate governance are influenced by cities' membership in TMCNs?
2. Is membership in TMCNs used for purposes other than enhancing urban climate governance and how does this use manifest on the local level?
3. Whose interests are mainly addressed in the way membership in TMCNs is utilised?

The research questions are addressed in the context of Germany. The following networks were considered TMCNs and their members were thus included in this thesis: 1) C40; 2) The Cities for Climate Protection Programme (CCP); 3) Climate Alliance; 4) Covenant of Mayors; 5) Energy Cities; 6) Future Cities; 7) Mayors Adapt; 8) World Mayors Council on Climate Change; 9) The Making Cities Resilient Campaign (Resilient Cities). More information on these networks and their selection can be found in the Results section, Table 6 and Article I.

This thesis consists of this "kappa" (Swedish for "coat" or "cover story") and four appended articles. The kappa presents the research project, links the articles together and points out how the research conducted for the separate papers contributes to answering the research questions. It also grants space to reflect on issues that did not find space in the constrained volume of scientific articles (e.g., ontological and epistemological considerations, deeper reflections on methods and side-findings of my research).

Articles

In this section I briefly present the articles included in this thesis and show how they relate to the research questions.

Table 1. Article Overview
Overview of current status of the articles of this thesis

Title	Journal	Status
I. Linked for Action?	International Journal of Urban Sustainable Development	Published
II. Green Attraction	Journal of Management and Sustainability	Published
III. Usual Suspects	Challenges in Sustainability	Published
IV. Shaping Local Responses	Peer-reviewed scientific journal	Submitted

Article I provides an initial overview of the proliferation of TMCNs in Germany and an assessment of their potential impact on urban climate governance. It also presents a review of the literature on TMCNs and a first framework for further investigating the networks' functions.

Article II investigates if and how German cities use their membership in TMCNs for reasons other than improving urban climate governance, with specific focus on green city branding.

Article III follows the work conducted for Article II. It investigates which cities and regions are particularly prevalent in the selection of best practice cases by ICLEI due to their urban sustainability achievements. ICLEI itself is not a TMCN, but it has initiated the CCP, which is a TMCN. ICLEI furthermore presents cases of successful urban climate governance in their case study collection.

Article IV draws on the full range of data collected over the course of this thesis project. On this basis, a systematic overview of the impacts of TMCN membership on urban climate governance in Germany is presented. The table below indicates each article's focus in relation to sub-research question(s).

Table 2. Article and Research Questions
This table shows how the four articles address the research questions

Article	RQ1	RQ2	RQ3
I. Linked for Action?			
II. Green Attraction			
III. Usual Suspects			
IV. Shaping Local Responses			

Outline of the Kappa

Following this introduction, I will introduce the theoretical background upon which my research rests, and go on to present my research methodology. The following chapter provides an introduction to climate governance in Germany. After that, I present results that are key for answering proposed research questions. In the discussion, I reflect on my findings in relation to the theoretical frameworks I developed, and, in particular, the scientific literature on TMCNs. Finally, I present the contributions this thesis makes to the field, together with ideas for future research on TMCNs and urban climate governance. The four articles are attached in the appendix.

Theoretical Background

This chapter presents the theoretical background of this thesis. It will start with a summary of the current research on TMCNs, with special focus on theorising TMCN impact on climate governance. This literature is the basis for the analysis of the first research question and makes up the theoretical foundation for Article I and IV. Then theoretical approaches to green city branding will be presented, relevant to answering the second research question. The third research question is approached from two theoretical angles: a theorisation of agency and existing theory on policy entrepreneurs. The theorisation of agency is used to locate actors relevant for the way how membership in TMCNs is used in German cities. The theory on policy entrepreneurship is employed to shed light on mechanisms of TMCN usage in local governance processes and to reflect on interests and motivations of actors (mostly climate managers) involved in these processes.

The reviewed literature comes from different disciplines including geography, political science, sociology and management. This wide spectrum reflects the theoretical pluralism that characterises sustainability science.

Theorising TMCNs and Their Impact

According to Kern and Bulkeley (2009), TMCNs share three main characteristics. First, membership in these networks is voluntary. Second, they have a non-hierarchical, horizontal and polycentric set-up. Third, their work goes beyond lobbying and mobilisation, but they aim at fostering the implementation of measures through their members. In accordance, I define TMCNs in this thesis as "institutionalised spaces where local governments from different countries come together as equitable partners in an exchange on climate change related issues" (Busch, 2015). A TMCN needs thus to fulfil the following criteria: i) it operates in more than one country; ii) membership is formalised, entailing a list of rights and/or obligations for the member; iii) it has more than two members; iv) its main objective is to address climate change (causes and/or impacts); and v) it has at least a basic infrastructure at its disposal (staff and a physical address). To be included in this research, a TMCN also has to have at least one member in Germany.

Several frameworks that can support the investigation of the impacts of TMCN membership on local climate governance have been put forward. In this analysis, urban climate governance is understood as "the roles, means and methods of local authorities (and their interaction with other key stakeholders) in developing, adopting and implementing urban climate strategies on both climate change mitigation and adaptation" (Lenhart, 2015 p. 12).

One of the earliest conceptual frameworks for understanding the impacts of TCMNs, presented by Bulkeley (2003), identifies different ways in which policy processes can be affected. These are: i) knowledge dissemination, ii) lobbying higher levels of the multilevel governance system, iii) acting as implementing agencies for European policies and iv) creating and promoting policy initiatives throughout the multilevel governance system.

Andonova et al. (2009) suggest a slightly different model to assess how TMCNs can use "soft" governance instruments to foster climate governance. These instruments are: a) information-sharing, b) capacity building and c) rule setting. These impacts are not mutually exclusive and some networks combine different roles while others do not (Bulkeley & Newell, 2015).

Table 3. Overview of TCMN Roles and Functions
This table displays TMCN functions as described in previous research

Framework / Roles & functions	Bulkeley et al (2003)	Andonova et al (2009)
1	Knowledge dissemination	Information sharing
2	Lobbying	Capacity building & implementation
3	Implementation of EU policies	Rule setting
4	Policy initiation	

Despite the emergence of frameworks for assessing TMCNs impacts on the different levels of climate governance, most research on TMCNs remains at a fairly theoretical level, and a thorough review of the literature shows that empirically based assessments of TMCNs' impacts on local climate governance are scarce. In multilevel studies (of the global, regional or national level), it is often argued that the impact of TMCNs on local emissions is not significant or at least not measurable (Bulkeley & Newell, 2015; Davies, 2005; Fay, 2007). Other studies have come to different conclusions: Zeppel (Zeppel, 2013b, p. 226) argues that one of the TMCNs, namely the CCP, has "played a significant role in urban climate programmes" in Australia, and Hakelberg (2014) concludes that TMCNs have clearly promoted the spread of local climate strategies among European cities between 1992 and 2009.

An equally diverse picture is painted by the literature on TMCNs' impact that focuses on climate governance on the municipal or city level, which relies on empirical data to further develop theoretical approaches to TMCNs. For example, Betsill and Bulkeley (2004) find that CCP attracts members not for their role as a knowledge platform, but because they provide access to financial and political resources, and serve as a legitimacy tool in the context of climate change mitigation. However, a study on the impacts of TMCNs in Ireland found that most municipalities perceive the networks' most important function to be their role as information disseminators (Davies, 2005). Toly (2008) finds that the two most important functions of TMCNs are inter-municipal dialogue and the pooling of global influence. Bulkeley and Newell (2015, p. 83) see an impact on international/global climate governance through the forming of "coalitions of the willing" that are able to show what can be achieved on the ground, leading to more ambitious treaties on higher levels.

Which members of TMCNs are actually influenced by networks they are a part of is another contested question. Kern and Bulkeley (2009, p. 329) perceive TMCNs as mostly networks of "pioneers for pioneers". This might be the case for networks which explicitly aim to unite leading cities or municipalities like the C40 network or the World Mayors Council on Climate Change. However, their study was conducted before the Covenant of Mayors (founded in 2008) fully kicked off in Europe. This network currently has more than 6500 members and can hardly be viewed as a network of pioneers.

Systematic assessments of TMCNs' impacts are scarce. Among the few is an attempt by Kern and Bulkeley (2009), who present an overview of TMCNs' proliferation that provides numbers of how many networks different European municipalities have joined. However, their investigation does not go beyond providing an initial overview of membership numbers. In addition, their data are outdated and do not reflect a number of trends of recent years, such as the rise of adaptation networks. A second investigation, based on a sample of 274 European cities, is presented by Hakelberg (2011). He shows how membership in TMCNs correlates with the adoption of local climate strategies. The quantitative analysis is supplemented by case studies on two German cities, which is based on qualitative data. Hakelberg, however, limits his investigation to the formal adoption of climate plans, excluding all other possible impacts. Other studies rely on data gathered from staff of TMCNs (e.g., Oppowa, 2015), and neglect the actors that are actually involved in local climate governance processes, namely, the climate managers in member cities.

To summarise, all studies that have put forward theories or frameworks on TMCNs and their impact share that they are either 1) several years old and thus to some degree outdated; 2) based on a few case studies, often of high performing cities, which do not present a systematic investigation of a bigger set of cases (e.g., Oppowa, 2015), 3) only focus on one specific impact of TMCN governance, e.g.,

the link between TMCN membership and the development of local climate strategies (e.g., Hakelberg, 2014) or 4) focus on the work of the staff of networks and not on the staff from member municipalities (e.g., Van Egmond, 2011).

The described literature builds the foundation for my work on TMCNs, and my thesis aims to contribute to this body of literature. This means that I engage with the presented theoretical concepts throughout the kappa and in all of the articles. In the Discussion section I further position my research in relation to the body of existing research on TMCNs.

Green City Branding

Green city branding and TMCNs are linked in several ways. Several TMCNs point at the potential they offer as platforms for green city branding activities when describing the advantages a network membership brings. Networks display the achievements of their members in member sections, as well as in best practice collections. It has also been argued that the green image of a city can be supported by a city's involvement in TMCNs (Keiner & Kim, 2007).

A growing body of literature on city branding has emerged in recent years. These studies often underline the increasing importance of brands for cities to compete for mobile resources such as financial capital, well-educated inhabitants (Florida, 2002) or tourists (Dinnie, 2010; Lucarelli & Berg, 2011). Green city branding is a specific kind of place branding which has become increasingly prominent (Marin-Aguilar & Vila-López, 2014). It focusses on environmental sustainability achievements of cities such as climate policies or low impact neighbourhoods.

The literature on green city branding differentiates between three (different but often connected) kinds of green city branding: The liveable city, the knowledgeable city, and the low-impact city (Busch & Anderberg, 2015).

The liveable city: The link between liveability and "greenness" is often used for green city branding (Insch, 2011). Green infrastructure, bike highways and urban agriculture make the city a more pleasant and healthy place to live in. This attracts highly qualified inhabitants (Florida, 2002) and companies which in turn can attract new employees by pointing at the city's liveability. While many measures of this kind reduce pressures on the local environment and assist in adapting to potential future climate risks, they do not primarily aim at reducing the global environmental impact of the city (e.g., its greenhouse gas emissions and related impacts).

The knowledgeable city: If a city is perceived as particularly knowledgeable in regards to environmental policies and technology it can attract policy tourists (Andersson, 2015a) and green-tech companies (Anderberg & Clark, 2013). Using

sustainability policies can thus be used as a development strategy, as can be seen in the case of Malmö (Holgersen & Malm, 2015), Växjö (Emelianoff, 2013) or Prenzlau (Busch & McCormick, 2014). An additional benefit of this kind of green city branding is that it may attract the attention of funding bodies responsible for sustainability projects, including climate change mitigation and adaptation (Gustavsson, Elander, & Lundmark, 2009).

The low-impact city: Cities can also be branded as having a low impact on the environment in general and the climate in particular. Companies might be attracted to such a city so that its products might become associated with the city's green brand. A low-impact character might also serve as guidance for further development of the city (Ashworth, Kavaratzis, & Wannaby, 2015) and strengthen the local identity of citizens. Just like a knowledgeable city, a low-impact city might attract attention of funding bodies (Gustavsson & Elander, 2012).

Despite the fact that green city branding builds on green policies and achievements, it does not mean that the intentions behind these activities are necessarily based in considerations about sustainability (Bouteligier, 2013). In addition, it can be questioned if show-case development of a single neighbourhood or quarter will lead to the transformation of urban areas towards sustainability (Bouteligier, 2013). It can also be argued that green city branding can lead to what Checker calls "environmental gentrification" (2011, p. 210). In such a case, the environmentally sound development of neighbourhoods is driven by prospects for profitable investments. This can lead to green but expensive property which raises serious questions in regards to social sustainability (Wiesemann, 2014).

Policy Entrepreneurship

The theory on policy entrepreneurs can help to investigate the ways in which actors use skills and resources to influence policy processes (Beeson & Stone, 2013). Furthermore, it can shed light on what motivates policy entrepreneurs to engage in these processes. In the context of this thesis, the theory is linked to the third research question which deals with local agents (here mainly local climate managers), their interests and how TMCN membership play out in the political processes they are involved in.

Many scholars in the field of TMCNs have stressed the importance of policy entrepreneurs (Bulkeley, 2010; Hakelberg, 2011; Kern & Bulkeley, 2009; Lee & van de Meene, 2012; Van Egmond, 2011). Nevertheless, the concept has thus far not been applied to the use of TMCNs in local climate governance. The concept has originally been introduced by Kingdon (1984). Policy entrepreneurs are people who participate in policy making and are interested in "*significantly change current ways of doing things in their area of interest*" (Mintrom & Norman, 2009,

p.650). According to Kingdon (1984, p.122) they are characterised by a "*willingness to invest their resources – time, energy, reputation, and sometimes money – in the hope of future return*". The returns can take different forms, such as: policies they approve of; satisfaction from participation; and, finally, career advancement (Kingdon, 1984).

According to Mintrom and Norman (2009), policy entrepreneurship is characterised by four elements: 1) Displaying social acuity, 2) defining problems, 3) building teams, and 4) leading by example. **Social acuity** refers to the policy entrepreneur's ability to spot windows of opportunity. It also refers to making good use of networks to acquire knowledge from outside of their direct environment and to use contacts to actors outside of their jurisdiction in order to succeed with their policies (Mintrom & Norman, 2009). Policy entrepreneurs also need to be able to understand the motives and interests of other actors within their policy context. The second element, **problem definition**, refers to the act of communicating the problem as the policy entrepreneur sees it, so that decision makers feel inclined to implement suggested policy responses (Mintrom & Vergari, 1996). As a third element, policy entrepreneurs need to be able to **build teams**. This refers to building teams in the direct working environment of the policy entrepreneur, which will provide access to skills and knowledge. It also refers to the ability to show that policies are supported by a broad coalition. In this context it is helpful if the coalition is large in size and is made up of heterogeneous actors. The last element is **leading by example**. This encompasses the efforts of policy entrepreneurs to reduce the perception of risk that is assigned by decision makers to certain policy measures and to show the workability of these measures (Mintrom & Norman, 2009). A fifth dimension can be added by drawing from earlier work by Kingdon (1984), which refers to the importance of persistence. It is said that policy entrepreneurs have to show high levels of persistence when pursuing their cause (Kingdon, 1984).

Kingdon does not explain the **motivation** of policy entrepreneurs in detail, and instead remains rather abstract. According to him, policy entrepreneurs act in anticipation of returns which can take different form, such as: policies they approve of, satisfaction from participation or personal aggrandisement e.g., in the form of job security or promotions (Kingdon, 1984). Mintrom and Norman point out that the motivations of policy entrepreneurs have not received much attention in the past (Mintrom & Norman, 2009). Their approach to this issue is to focus solely on one of the forms of return Kingdon mentions, namely, personal benefits. They explain the motivation of policy entrepreneurs through a rational actor perspective that is guided by self-interest. Thus, the actions of policy entrepreneurs are guided by career prospects. This view is rejected by King and Roberts (1992, p.182) who "*did not find self-interest to be the primary motivator*" for policy entrepreneurs, but instead found that they are guided by the ambition to make a contribution to society.

Agency

Former studies on TMCNs often take the city or network level as their point of departure. This approach helps one understand the structures in which climate action in the contexts of TMCNs can take place. It falls short, however, of shedding light on how action within this frame manifests. To understand the mechanisms of how TMCN membership is used in urban climate governance it is thus important to identify and theorise agents that shape these actions and to investigate the nature of their agency. According to Hewson, agency is the basic human experience which is characterised by activity and not passivity (Hewson, 2010). It entails "acting, doing things, making things happen, exerting power, being a subject of events, or controlling things" (Hewson, 2010, p.13). The lack of agency is characterised by passivity: being acted upon, being the subject to actions of others or in general things happening to one. Hewson (2010) presents three different forms of agency: 1) **Individual agency**: which describes the actions of individuals on their environment based on their own intentions; 2) **Proxy agency**: refers to a situation where one agent acts on the interests or orders of another agent: for example staff of a company acting on behalf of their boss or members of an administration acting on behalf of the government; 3) **Collective agency**: is the agency of collective entities, which in turn are a product of the collaboration of individuals.

Agency is based on three main principles. The first one is the **intentionality** of agency. Agency is driven by purpose or intentions. Actions which are not based on intention do not constitute agency (Hewson, 2010). Agency is also based on **power**. This power is based on resources and capabilities that agents command. Power and capability are not necessarily distributed equally. As a consequence, agency is not distributed equally either (Hewson, 2010). The third principle is the **rationality** of agents. Agents use their rationality to calculate the success of their actions and to revaluate them based on outcomes (Moses & Knutsen, 2007).

Summary

The four theoretical angles presented in this chapter have enabled me to investigate different ways in which TMCN membership influences urban climate governance in Germany. I chose the last three theories (green city branding, policy entrepreneurship and agency) to focus on aspects that, so far, have not received significant attention in the body of literature on TMCNs. The choice for these three theories was made after a preliminary analysis of my empirical material (especially the observations at network conferences, the analysis of TMCN webpages and interviews with TMCN staff – for more details, refer to the Methodology section).

Methodology

Ontological and Epistemological Considerations

Ontologically – and consequently epistemologically – this thesis is based on realism or, more precisely, on critical realism. This means that I accept the existence of a "real" world with natural phenomena. At the same time, I agree with Bhaskar (1989, p.2) in that:

> We will only be able to understand – and so change – the social world if we identify the structures at work that generate those events and discourses. (...) These structures (...) can only be identified through the practical and theoretical work of the social science. (as quoted in Bryman, 2008, p.14)

For my research project, this means that the challenges for city administrations which come with climate change are real. I am, however, not interested in these challenges as such, but in the way in which they affect social realities and vice versa. For example, the emergence of the TMCNs that I investigate in my research is a social response to changes in the environmental system, while their climate change mitigation or adaptation policies are a social construct that will influence said system. As (social) reality can only be investigated with methods, terms and theories that are shaped by social conditions themselves, I accept the fact that my findings can only be provisional, and do not represent a universal truth (Bryman, 2008).

Research in Sustainability Science

This PhD thesis is written in sustainability science. Research projects in sustainability science have the ambition to deal with "real-world" sustainability problems (Lang et al., 2012; Thorén, 2015). Many of these problems are complex problems, which are characterised by interactions between social and natural processes (Kates et al., 2001). The sustainability problem this thesis is addressing is climate change, and, in this context, the lack of adequate urban climate governance.

Complex sustainability problems - such as finding good responses to climate change - can often not be effectively tackled by a disciplinary approach (Wiek, Withycombe, & Redman, 2011). Thus, sustainability science relies on an interdisciplinary approach which is characterised by methodological pluralism (Moses & Knutsen, 2007), allowing for a "more systemic and more holistic" approach (Max-Neef, 2005, p. 15). In accordance with my research purpose, in this PhD project I drew from theories and methodologies used in geography, political science, sociology and management. This approach allows me to investigate the role of TMCN membership in urban climate governance from different points of view, but it also grants room for a certain degree of ontological inconsistency.

In line with sustainability science, I strive for my research to have societal impact. It is therefore desirable that my articles are published in open access journals. This does, however, often mean that articles have to be published in less prestigious journals that may have a lower impact factor. To achieve a balance between open access and a higher impact factor, I have submitted at least every second manuscript to an open access journal. Consequently, Article II and III have been published in open access journals.

During the course of this PhD project I have been in contact with staff from TMCNs at several points (through interviews, at TMCN conferences and via email conversations). I used these opportunities to talk about my research and inform them about my results. I provided copies of Article I and II to the TMCN office in Brussels, which is shared by Climate Alliance, the Covenant of Mayors and Energy Cities. I also uploaded Article I and II to the section of Covenant's webpage where academia and practitioners are supposed to meet and interact. Finally, I recorded video abstracts for Article I and II which are available on Youtube, and include my contact details.

Research Strategy

As shown in the literature review above, systematic investigations of TMCN impacts on local climate governance are lacking in existing TMCN literature. Thus far, research on TMCNs has mostly relied on case studies with a limited number of cases. A study with a solid empirical basis is missing. I attempt to address this research gap by applying a mixed method approach, and by providing a comprehensive and systematic investigation of TMCN impacts. I considered all types of impacts of TMCN membership on local urban climate governance. Furthermore, I included a broad range of empirical material. I also included a broad empirical basis with data from all German cities with TMCN memberships and more than 50,000 inhabitants. This means that this study does not exclusively

rely on cases and includes elements of a population study (survey, webpage analysis). Case study elements (interviews) are integrated to shed light on processes more quantitative methods miss out on.

Inductive and Deductive Research

This thesis applies both an inductive and a deductive approach to investigate the impact of TMCNs on local climate governance. Article I and II both employ a deductive approach, with Article I focussing on developing theory on TMCNs and Article II testing theory through hypotheses. Article III and IV both aim at developing theory and knowledge through an inductive approach. In both articles (III and IV), the data generated from the empirical material was the starting point of the investigation and the basis for the development of theory. I chose this order (first two deductive, then two inductive) to first let myself be guided by research that had been conducted in the field and to better understand what knowledge gaps still remained, after which I focused on closing these by applying methodologies that were novel to previous research on TMCNs.

Data Collection

The project was based on several different data collection methods (Table 4):

- As a first method, a statistical overview over memberships in TMCNs in Germany was compiled. The objective of this was to gain an overview of the proliferation of TMCNs in Germany and to identify cities with membership in multiple TMCNs.
- A survey of all German cities comprised of more than 50.000 inhabitants and with membership in TMCNs was conducted. All 136 cities that fulfilled these criteria were considered. The relevant departments were first identified through an investigation of the cities' webpages. These departments were contacted and the staff members working with TMCNs were identified (in most cases local climate managers). 61 respondents filled out the survey. This corresponds to a response rate of 45%. The survey was employed to gain an understanding of the views of climate managers. Their perspective was needed to identify and assess the importance of TMCN functions and their impact on local climate governance.
- All of ICLEI's 181 case studies were compiled and analysed to gain an overview of the geographical distribution of the presented cities and to identify the "usual suspects".

- The webpages of all 136 cities above 50,000 inhabitants and with membership in TMCNs were analysed. In addition, all member profiles of German cities on TMCN webpages were analysed. These analyses were used to assess how widespread green city branding activities are in Germany.
- Different kinds of material disseminated by TMCNs were analysed. This included analysis of webpages, newsletters, leaflets, conference presentations and reports. This material was used for multiple purposes and to address different research questions.
- Six formal interviews were conducted with staff from German cities. These interviews were used to gain insights into the mechanisms of TMCN impact identified through the survey.
- A number of informal interviews with staff from German and European cities were held at network conferences. These interviews were used to identify relevant cases for further investigation and to meet potential informants for formal interviews.
- Skype interviews were conducted with five staff members of TMCNs (mostly Climate Alliance). These interviews were used to gain insights into the perspective of TMCN staff and to identify points in which the interests of actors in city administrations and TMCNs diverged.
- Finally, conference observations were made and documented to understand how climate managers interact with their peers from other cities and TMCN staff in a conference setting. These observations also helped me understand the purpose of TMCN conferences from different perspectives.

Table 4. Methods and Sampling
The table below shows all material and the respective sampling method.

Methods and Sources of Data	Data/Sample
Statistical overview of memberships in TMCNs in Germany	All TMCNs as identified for this research and all German municipalities, irrespective of size
Survey	All German cities with more than 50,000 inhabitants and memberhsip in at least one TMCN (n=136; 61 respondents = 45% response rate)
Analysis of ICLEI's case studies	All of ICLEI's 181 best practice case studies
Webpage analysis of TMCNs	Member profiles of all German members in all TMCNs which were included in this research
Webpage analysis of German cities	All German cities above 50.000 with membership in at least one TMCN
Document analysis	Official material disseminated by TMCNs such as reports, leaflets, press releases and policy papers
Review of newsletters	LG-Action-Net: Joint newsletter of Climate Alliance, Energy Cities, ICLEI and EuroCities from 2012-2016
Interviews with staff in German cities	Six interviews were conducted with administrative staff in German cities (Bonn, Bielefeld, Hannover, Frankfurt [Main]). Respondents were responsible for the cities' work with TMCNs (five out of six were climate managers). Cities and respondents were identified through answers from the survey.
Informal interviews	With former and current staff of cities and TMCNs. Mostly at TMCN and other conferences
Skype interviews with TMCN staff	Skype interviews were conducted with former and current staff of TMCNs (Climate Alliance, Covenant of Mayors and Energy Cities). Five interviews in total.
Observations at conferences	Documented through field notes, taken at one national conefernces of Climate Alliance (Lübeck, 2014) and one European conference of Climate Alliance and the Covenant of Mayors (The Hague, 2013)

The broad range of methods and sources of information enabled me to achieve triangulation and thus, a systematic approach to the phenomenon of TMCNs' impact on urban climate governance. The compiled material was used differently for the different articles (Table 5).

Table 5. Articles and Material
The table below provides an overview of the material that went into each of the articles.

Article	Material
I. Linked for Action	Statistical overview; conference observations; interviews with staff in German cities; informal interviews; skype interviews with TMCN staff
II. Green Attraction	Documents; newsletters; webpage analysis TMCNs; webpage analysis German Cities; Survey
III. Usual Suspects	ICLEI's case studies
IV. Shaping Local Responses	Survey; webpage analysis TMCNs; documents; interviews with staff in German cities; conference observations

Four methods were particularly important for this research project. Three of these – the survey, the analysis of city webpages and the observations made during network conferences – are methods uncommon to previous research on TMCNs. The fourth method I would like to highlight here are the interviews I conducted.

Survey: Previous research on TMCNs mostly relied on case studies of member municipalities (e.g., Betsill & Bulkeley, 2004; Zeppel, 2013a), inventories of membership numbers (e.g., Hakelberg, 2014; Kern & Bulkeley, 2009) or investigations that took the networks and their infrastructure and not their members as the research subject (e.g., Fay, 2007; Keiner & Kim, 2007; Toly, 2008; Zeppel, 2013b). A survey with a greater number of respondents was missing (with the possible exception of Lindseth's article (2004) which is limited to members of CCP and mostly relies on data from 1997). It is also worth noticing that my survey was not sent to a sample of cities, but to all 136 cities of the predefined population (Germany, >50,000 inhabitants, member of at least one TMCN).

Webpage Analysis: The analysis of city administrations' and TMCNs' webpages was mostly used as empirical basis for Article II. Just like the survey, I did not only consider a sample of cities, but the entire population of 136 cities (again: Germany, >50,000 inhabitants, member of at least one TMCN) and all member-pages of German cities of all TMCNs. Both the survey and the analysis of webpages allowed for a systematic.

Observations during TMCNs conferences: My ambition with these observations was to see how staff members from the cities work with the networks and to understand what topics they are concerned with during network meetings. The observations were recorded in field-notes. They can be characterised as unstructured observations that were both participant and non-participant observations (Bryman, 2008), depending on the activity during the conference and my respective involvement in them. The conference setting made the data free from the constraints and the atmosphere of interviews. This allowed for insights which might not have surfaced during interviews. One example for this is the identified motivational boost these meetings have for participants from cities. This

aspect has, so far, not been named as an impact of TMCN membership in the literature.

Interviews were an important source of information for this thesis. Despite the fact that many former studies on the impact of TMCNs relied mostly on interviews (e.g., Keiner & Kim, 2007; Kern & Bulkeley, 2009; Van Egmond, 2011; Zeppel, 2012), they still produced some valuable, novel insights into the mechanisms of how TMCN membership was used by climate managers in the investigated cities and whose interests are influencing these processes. Six interviews were conducted with climate managers in four German cities during the field visits to Bielefeld, Bonn, Hannover and Frankfurt (Main). The interviewees were identified through the survey, where they had indicated their willingness to be interviewed and where their cities had been named as interesting case by climate managers from other cities. These interviews were conducted by means of an interview-guide, which contained questions regarding the following themes: motivation for joining TMCNs; membership and local politics; the impact of TMCN membership on local climate politics and other activities; implementation of climate policies; and inter-city communication. Four out of six interviews were recorded. The remaining two could only be "recorded" in writing since my respondents wished not be recorded electronically. In addition to these interviews, I conducted and recorded five skype interviews with three current and two former staff members of Climate Alliance, Energy Cities and the Covenant of Mayors. The three current staff members were identified at the joint European conference of Climate Alliance and the Covenant of Mayors. The two former staff members I met by chance at a youth conference in the context of a different research project. Finally, I conducted informal interviews with staff of cities and TMCNs at network conferences. These interviews were documented through field notes.

Data Analysis

Interviews were transcribed and then open coding was applied to the transcripts (Bryman, 2008). A coding frame was developed to organise the transcripts. The results from the coding were used as complements to other data (e.g., statistics or survey results).

The survey comprised of different kinds of questions, such as open questions and multiple-choice questions. Accordingly, the analyses of these data relied on different methods: Open answers were collected and grouped according to either predefined categories or categories that emerged through selective coding in an inductive approach (Bryman, 2008). The network functions of Framework B are the result of this selective coding.

The results from the survey were not robust enough to allow for any sophisticated statistical analysis; however simple percentages were used as a

metric. The survey was mostly used for Article IV and more information can be found there.

Webpages and other information material (leaflets, presentations) of TMCNs were subject to a quantitative and qualitative content analysis, and were screened to find mentioning of green city branding. Additional material in the context of green city branding (membership pages on TMCN webpages and webpages of cities) was analysed according to the categories umbrella brand, brand attribute and sub brands, and were characterised according to the three categories of green city branding (knowledgeable, liveable and low-carbon). Further information on this can be found in Article II.

The data from the ICLEI case study collections was sorted according to regions, countries and cities to allow for comparison and to identify the "usual suspects". More on this can be found in Article III.

Except for Article III, all articles relied on a combination of data analyses which were used to complement each other. The quantitative data was used to reveal certain trends and the qualitative data was then used to explain the mechanism behind these trends (the second framework, presented in Article IV, was developed in this way).

Framework Development

Over the course of this research project, two different frameworks were developed that theorise TMCN impact on urban climate governance. Framework A (see Figure 1) was developed based on a synthesis of the literature on TMCNs and a small empirical basis. The empirical material included material disseminated by TMCNs, three interviews with staff of TMCNs and four interviews with climate mangers in German cities. Framework A was designed to describe and theorise the functions of TMCNs and link them to existing theory on TMCNs. It reflects the view of staff from networks and cities, and tries to adopt the point of view of local governments, meaning that the networks' functions are described as something that affects local climate governance and not climate governance in general. The framework focusses on the interaction between the local administration and TMCNs. By choosing this focus I followed the dominant emphasis in the literature, and it is thus rather deductive. More on Framework A can be found in Article I.

The approach to develop Framework B (see Figure 2) differed. The framework was developed based on an inductive approach with a broad empirical basis. By choosing a second approach, this time inductive, to framework development I attempted to a) address the shortcomings of Framework A and b) shed light on the internal processes which are happening on the municipal level. This approach was mainly based on the survey, observations at conferences and

interviews, and reflects the point of view of those actors (climate managers) in the cities who work directly with the TMCNs. This means that Framework B is both a framework for analysing the use of TMCN membership by local actors and an assessment of the importance of these processes. In the survey, respondents were, amongst other things, asked to name the four most important impacts of TMCN membership on their cities' climate governance. This was an open question without predefined answers. The replies were grouped in categories according to the mechanisms by which TMCN membership unfolds. The more replies a category got, the more important this category was considered to be. More on Framework B can be found in Article IV.

Research Context

The choice of Germany as a study area was based on a) the relative success of Germany as a country in terms of carbon dioxide (CO_2) emissions (Friedlingstein et al., 2010); b) the historical involvement of German cities in climate change mitigation initiatives; c) the relatively high degree of urbanisation (United States of America Central Intelligence Agency, n.d.) and d) questions of practicality (language, accessibility, contacts, thus convenience sample (Bryman, 2008)).
Many German cities have long-standing experience with green policies. Climate change entered the political agenda in Germany some 25 years ago and has since been taken up by actors in many cities. The founding of Climate Alliance in Frankfurt (Main) in 1990 is an additional indicator of this development (Climate Alliance, 2014). Furthermore, Germany is known globally as a spearheading country in regards to climate policies. This chapter provides more detailed background information on Germany and the country's climate policies. These policies create the framework in which urban climate action is embedded.

Climate Change in Germany

Germany is the EU's largest economy and – with 81 million inhabitants - has the largest population (CIA, 2015). Germany is also the EU's biggest GHG emitter in absolute terms (Eurostat, 2016). These numbers underline the need for Germany to curb GHG emissions both in regards to the country's contribution to global emissions and also Germany's leading role within the European Union. The two main sources of GHG emissions are the energy sector, accounting for more than 38% of German emissions, and the transport sector, accounting for roughly 18% of German emissions (Umweltbundesamt, 2016).

Climate change will affect Germany in several ways. A changing climate will increase climate variability and the occurrence of extreme weather events such as heatwaves, cloud burst events, droughts, strong winds, storm surges and flooding (Umweltbundesamt, 2015). Models predict a decrease in flooding events in the East but an increase in the North, and especially the North-West of the country (Umweltbundesamt, 2015). Storm surges are more likely to occur on the coast of the North Sea (especially endangering the cities Bremen and Hamburg) and less

likely on the coasts of the Baltic Sea (Umweltbundesamt, 2015). This very brief overview shows that regions in Germany will be affected differently by climate change, meaning that cities have to find responses that reflect their specific needs. Consequently, climate change adaptation policies must be designed predominantly on the regional and local scale. In addition, all such predictions have a high degree of uncertainty (Huang, Hattermann, Krysanova, & Bronstert, 2013). This makes it hard to decide on which adaptation measures to implement on the ground. However, cities in Germany will also face a number of specific challenges irrespective of the details of different climate change scenarios. First, cities will be more prone to heat waves, in part due to the existing heat island effect (Maria et al., 2013; Umweltbundesamt, 2015). Second, cloudburst events will become more severe in urban areas compared to rural areas due to the high degree of paved and other non-porous surface (Kamal-Chaoui & Roberts, 2009; Tompkins & Eakin, 2012; Umweltbundesamt, 2015). Finally, stronger winds will have big impacts on cities because of the density of infrastructure and value (Umweltbundesamt, 2015). The described challenges underline the need for urban climate change mitigation and adaptation measures in Germany.

Germany's Role in Global Climate Governance

Internationally, Germany is known for its leading role in climate change mitigation. It is worth noting that climate change is an important issue for all German parties and not only for the Greens. This is reflected in Angela Merkel's unofficial title of *Klimakanzlerin* (German for "climate chancellor"), which she acquired in public debate in the run up to the 2009 COP 15 climate negotiations because of Germany's strong climate commitments (Aldred & Tepe, 2011). Merkel is head of the conservative party (CDU), which in the past had not been strongly engaged in environmental matters. This demonstrates broad engagement of Germany's political parties with questions of climate change mitigation. Currently, Germany has committed to a reduction of 40% by 2020 and a reduction of 80 to 95% by 2050 (Federal Ministry for the Environment, 2016a). The baseline for these targets is the German emissions from 1990. The German goals and commitments to the global fight against climate change are the result of negotiation on the European level.

The German Energy System and the *Energiewende*

Climate change mitigation policies in Germany have focussed heavily on the transition of the energy system from being based on fossil fuels to a system based on renewable energies (Quitzow et al., 2016). Traditionally, the German energy sector was dominated by big centralised electricity plants, above all coal-fired ones. Coal can be found in different German regions, and has shaped the landscape, culture and the energy system. After the 1970s' oil shocks, West German policies aimed at making the country less dependent on energy imports and as a consequence coal and nuclear power were favoured (Karlsch & Stokes, 2003). East Germany relied heavily on local resources. Coal, especially from the Lausitz region, became the most important source of energy in the German Democratic Republic. Nowadays, Germany's biggest coal-power plant, Jänschwalde, is still operating in that region (Busch & McCormick, 2014).

Two major decisions have shaped the development of the German energy system in recent decades. The first is the phase out of nuclear energy, first by the social democrat and green coalition of 1998 to 2005, and then again by the Merkel government of 2011 in the aftermath of the Fukushima disaster (Gawel et al., 2014). The second is the German *Energiewende* (energy transition). These two decisions take shape through two main policy documents: the Renewable Energy Act and the Federal Energy Concept (Quitzow et al., 2016). The social democrat and green coalition of 1998-2005 also launched the first strong renewable energy policies. The most important law in this context is the *Erneuerbare Energien Gesetz* (EEG) of 2000 that formulated feed-in rules, including a predefined feed-in tariff for renewable energy. Despite two changes of government and several revisions the EEG is still in force. Until today the *Energiewende* has led to a considerable increase in the share of renewable energies in the German energy mix. Last year (2015), 32% of German electricity came from renewable sources (Agora Energiewende, 2016).

While the *Energiewende* is depicted as the cornerstone of German climate policies, its implementation is not solely motivated by environmental considerations. Several economic and strategic advantages are associated with the transition of the energy system. A strong renewable sector can reduce the dependence on energy imports and can enable high-tech development (Quitzow et al., 2016). It can also serve as a mainspring for local and regional economic development (Busch, 2010; Busch & McCormick, 2014; Islar & Busch, 2016).

How can urban climate managers effectively contribute to climate change mitigation when a high share of the energy production infrastructure is found in rural areas? Many German cities still own their own, usually smaller, energy production facilities, in German *Stadtwerke*. These companies can be an important factor in local energy transitions towards renewable energies (Busch &

McCormick, 2014; Weidner & Mez, 2008). While electricity production makes up a considerable share of GHG emissions, other fields, such as transport or heating, must not be neglected. One factor that has been largely overlooked in debates on energy transitions is the question of supply-side management, especially, energy efficiency (Buschmann, 2013). Cities are places where practices of heating and transport, and therefor potentials for energy efficiency concentrate. Thus, German cities can make a major contribution to the country's efforts to mitigate climate change.

Federal Set-Up and Administrative Structures

Germany is a Federal Republic as is codified in article 20 of *Grundgesetz* (the German Basic Law which serves as a constitution). This means that the country consists of a number of states that retain a certain degree of independence. These states in turn consist of smaller administrative units with the local level (municipality) forming the lowest level. The relationship between the different levels is defined by the principle of subsidiarity, which is codified in article 23 of the *Grundgesetz*. This principle states that decisions should be taken on the lowest possible level. Furthermore, article 28 guarantees local autonomy to municipalities. This means that local authorities are often responsible for providing services of general interest (in German *Daseinsvorsorge*). These services include the provision of drinking water, sanitation and electricity, but also the protection of local inhabitants from hazards. As a consequence, local authorities, such as urban administrations, have considerable influence over questions surrounding local climate change mitigation and adaptation.

The climate work on the municipal level is often part of the portfolio of environmental departments (Bauer, Gebauer, Hertle, & Paar, 2013; Wamsler, 2015). However, municipalities have a certain degree of freedom in how they organise and distribute tasks internally. Even though the official title might differ, staff working in this field are normally referred to as *Klimamanager* (climate managers). Bigger municipalities tend to have a higher number of climate managers (Bauer et al., 2013), with cities with populations over 100.000 sometimes having more than ten (own data from the survey).

German Climate Change Policies – Funding Schemes and Programmes

The Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety lists three main fields of activity in regards to climate change. These are 1) Germany's participation in the European Emission Trading System; 2) the National Energy Efficiency Initiative; 3) the National Climate Protection Initiative. Numbers 2 and 3 have direct implications for the work on climate issues in municipalities and cities. Through the National Energy Efficiency Initiative, municipalities can gain access to different funding schemes in order to finance projects that improve energy efficiency in publicly owned buildings and institutions, such as schools. In addition, the initiative influences the development of new neighbourhoods through different funding schemes (Federal Ministry for the Environment, 2016b).

The National Climate Protection Initiative affects municipal climate governance directly through its sub-programme called *Kommunaler Klimaschutz* (municipal climate protection). Through the programme, climate change mitigation and adaptation projects in municipalities can be funded (Federal Ministry for the Environment, 2016c). The programme also funds the new establishment of positions of climate managers in municipalities (Federal Ministry for the Environment, 2015).

It is worth mentioning that the official webpages of the ministry, which outline Germany's climate policies, focus heavily on climate change mitigation. Climate change adaptation is first encountered through the webpages describing the "municipal climate protection" sub-programme. Adaptation to climate change is listed as one out of four sub topics for municipal climate strategies (Federal Ministry for the Environment, 2015). In the context of this programme, there was also a funding scheme for climate adaptation managers that followed the funding scheme for climate managers who mostly focus on climate mitigation measures.

Climate Mangers

The use of the term climate managers in this thesis differs slightly from the German term *Klimamanager*. In Germany the term mainly refers to the staff members in municipalities who recently have been hired through the *Kummunaler Klimaschutz* Programme. These are often recent university graduates without extensive work experience. I use the term more broadly and also refer to staff in municipalities who work on climate mitigation and/or adaptation issues as "climate managers". Many staff members in German cities have been working on climate issues for many years without being officially labelled *Klimamanager*.

Results

This section presents the main findings of my study and is structured by the three research questions. First, I examine the different aspects of urban climate governance that have been influenced by TMCNs. I begin by demonstrating the potential of TMCNs to impact urban climate governance in Germany. Then, I present the results regarding the first research question which led to the development of the two frameworks used to theorise and assess impacts of TMCN membership (see Article I and IV). Thereafter, I address the second research question by presenting my results in relation to cities' use of their membership in TMCNs for purposes other than enhancing climate governance, with a focus on green city branding. Finally, I turn to the third research question and identify the interests and locate agency that can shape the way in which TMCN membership is utilised.

TMCNs and Impacts of Membership

Potential for Impact

My results show that in Germany, 488 local or regional entities are members of at least one of the identified TMCNs. Most of them are municipalities (*Gemeinde*), but there are also a few *Landkreise* (counties) or *Bezirke* of bigger cities (districts) that are members. These bodies account for 44.5 million people, which is more than half of the entire population of Germany. Table 6 provides an overview of the identified TMCNs present in Germany, including their thematic focus and their proliferation. Climate Alliance and the Covenant of Mayors have the most members in Germany (472 and 57, respectively). The number of German members of the different networks is not proportional to the number of European or global members. German municipalities are more likely to be members of Climate Alliance than the Covenant of Mayors. At the same time, a member of Climate Alliance is more likely to be German (nearly 1/3 of all members are German) than a member of the Covenant of Mayors (less than 1% of all members are German). The large number of German members of Climate Alliance can be explained by

the history of this network. Climate Alliance was founded in 1990 in Frankfurt (Main) and has since then been dominated by members from German speaking countries (mostly Germany and Austria) (Busch, 2015).

With the exception of Climate Alliance, the group of German members of TMCNs are dominated by municipalities with large populations (>50,000 inhabitants). TMCN membership is particularly widespread among big cities: the 32 biggest cities in Germany are members of at least one of these networks. Of the 76 German cities with more than 100,000 inhabitants, 68 are members of at least one network. The municipalities that are members of more than one network are also predominantly big cities. These results show that TMCNs are widely proliferated in Germany and, thereby, indicate that they can potentially have an impact on a great number of municipalities. The memberships are especially widespread among relatively big cities.

Table 6. Overview TMCNs in Germany

Overview of the proliferation of different TMCNs in Germany. Source: Adjusted from Busch (2015). Numbers updated in Nov. 2015.

Network	Focus	Members	Members in Germany	German members above 50,000 inhabitants
Mayors Adapt	Adaptation	137	11	10
Covenant of Mayors	Mitigation	5954	57	40
Climate Alliance (only full individual members)	Mitigation and Adaptation	1440	472	127
C40	Mitigation and Adaptation	80	2	2
Energy Cities (only full individual members)	Mitigation	171	8	6
Future Cities	Adaptation	8	2	1
Cities for Climate Protection Europe (ICLEI Programme)	Mitigation and Adaptation	176	11	9
World Mayors Council on Climate Change	Mitigation and Adaptation	131	1	1
UNISDR Resilient Cities	Adaptation	2827	1	1

TMCN's Functions and Related Impact

The data analysis resulted in the development of two frameworks (A and B), which systematise the identified impacts of TMCNs. Framework A focusses on describing the impacts that occur from the interaction of the network and its members. The point of reference is the city as a whole. This framework reflects the scientific debate on TMCNs and the view of staff members employed by TMCNs. Framework B shifts this focus, and takes the climate managers and their departments as its point of reference.

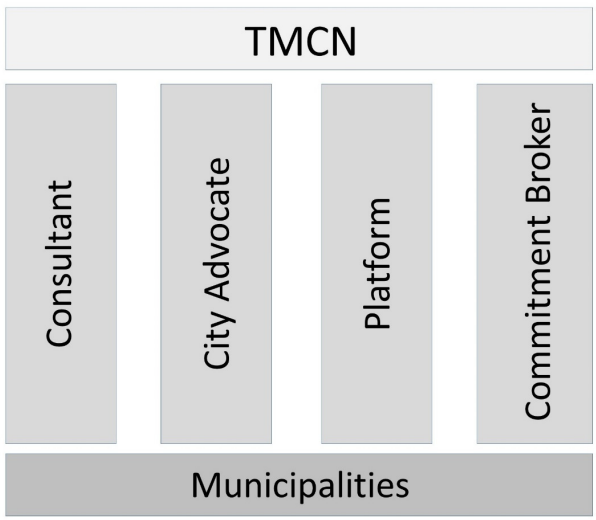

Figure 1. Framework A: TMCN Functions
This framework conceptualises the impact of TMCNs on local climate governance.

Framework A describes the four identified functions of TMCNs impact. These functions describe the advantages or services cities gain from being a member in TMCNs. Different networks provide these functions to a different degree. More on the assessment of the different TMCNs according to these functions can be found in Article I. The four identified functions are 1) Consultant; 2) City Advocate; 3) Platform; and 4) Commitment Broker**.**

1. **Consultant:** Local governments can access consultancy services through TMCNs. All TMCNs have established some degree of consultancy infrastructure and offer their own know-how and tools to their members. Examples of such tools are management packages for climate related activities and campaigns (Zeppel, 2013b) or computer programmes such

as the Climate Alliance's Climate Compass. Through their membership in networks, cities gain the right to access these consultancy services. The advantages of this function for local climate governance are clearly visible to the actors in member municipalities who work with TMCNs. TMCNs advertise these consultancy services visibly on their webpages and in other material such as leaflets or during network conferences.

2. **City Advocate:** Some networks lobby on behalf of their members on higher administrative levels, such as at the national or the EU level, or in connection with international meetings such as the COP, where they attempt to influence global environmental governance (Andonova et al., 2009; Toly, 2008). This influence on global or national environmental governance can then produce more favourable conditions for the work of climate managers in municipalities and cities (e.g., through new funding schemes for local climate projects, which are the results of TMCNs lobby work). Benefits from this function are often not directly visible to actors in cities. Even if lobbying by TMCNs leads to improved conditions for cities' climate work, the link between the two can seldom be proven. TMCNs present their lobbying efforts at network conferences and through webpages, newsletters and via their social media accounts. The results from the survey show, that, despite these efforts, the function City Advocate is not considered very important by climate managers in German cities.
3. **Platform:** Cities can use TMCNs as platforms to present their own work. This can take place as peer-communication during presentations and workshops at network conferences, or through the member-profiles on the TMCN webpages. Many authors link this TMCN function to learning processes (Betsill & Bulkeley, 2004; Bouteligier, 2013; Curtis, 2010; Keiner & Kim, 2007; Lindseth, 2004). In addition, it is in this context that many networks directly or indirectly underline the potential for green place branding. Most of this communication takes place in the form of best practice examples which are presented on TMCN homepages or newsletters. In most cases climate managers are responsible for preparing case studies, but my interviews show that they do not see this as an important or influential aspect of their work. The presentation of case studies on network webpages or during network conferences is often initiated by TMCNs and not by their members. The analysis of the membership profiles on TMCN webpages showed that the data of German cities, their projects and related case studies is often outdated. More on this can be found in Article II. However, in the survey most climate managers reported that delegations from their cities had visited other TMCN members to learn about climate policies in other cities, and that their cities had been visited by delegations from other cities. TMCNs

seem instrumental in facilitating the exchange between staff in different cities that leads to this kind of study visits.

4. **Commitment Broker:** Several of the TMCNs ask their members to commit to certain objectives when joining the network. In most cases these are emission reduction goals (e.g., Climate Alliance) or energy plans (Covenant of Mayors). In some cases members have to report back to the networks about their progress, which then is made public (Covenant of Mayors). This reporting creates an atmosphere characterised by accountability and transparency (Fay, 2007; Toly, 2008) that can prevent free-riding behaviour. This would, in theory, make it easier for members of TMCNs to live up to their obligations. For this function it is helpful if the respective network has a high number of members it can point at (e.g., see webpages of Covenant of Mayors, Climate Alliance and Energy Cities). A high number of members is used by the networks to create a narrative of a broad climate movement, which their members are part of. This characteristic is less important for networks that strive for some level of exclusiveness like C40 (which tries to establish itself as network for megacities and globally leading cities).

This framework was helpful as a starting point to systematise TMCN's role and related impacts on local climate governance. However, since its development was mainly based on a literature review and data from network staff, it did not have a solid empirical basis regarding the member level.

As a response to this shortcoming, Framework B was developed, which relies heavily on the results from the survey. As a consequence, this second framework is based on the view of the climate managers who answered the questionnaire. Another defining factor is that Framework B is based on an assessment of the situation in German cities, while Framework A theorises network-member relations in general and without a particular geographical base.

Slightly more than half of the survey respondents (32/61) found that the climate work of their city had been influenced by TMCN membership; about one quarter did not see any influence (15/61); and another quarter wasn't sure or did not answer the question (14/61) (further information can be found in Article IV). The following five categories were created based on a grouping of the survey replies to an open question on the impacts of TMCN membership on the municipalities' climate work: 1) Enabling internal mobilisation; 2) Formulating emission reduction goals; 3) Institutionalising climate trajectories; 4) Enabling direct exchange between members; 5) Offering project support. Apart from these five main categories a number of sub-categories were developed which are discussed in more detail in Article IV.

1. **Enabling internal mobilisation.** (named 17 times) This category entails answers that referred to the use of TMCN membership to motivate climate governance within the member city in order to succeed in: putting climate change related issues on the local political agenda, raising awareness amongst the local population or justifying climate change mitigation or adaptation measures by means of the TMCN membership. It reflects the "soft" use of TMCNs membership in urban climate governance.
2. **Formulating emission reduction goals.** (named 14 times) Several of the investigated TMCNs require their members to commit to certain emission reduction goals (e.g., Climate Alliance, Covenant of Mayors). This impact is also strengthened by the fact that TMCNs set benchmarks by, for instance, formulating emission reduction goals for their members. Formulating clear and quantitative goals goes beyond simply putting climate change on the local agenda, as municipalities commit to these goals and can be held politically accountable for achieving them. Sufficient political support (which can be achieved through internal mobilisation, for example) is necessary for emission reduction goals to be formulated and proclaimed.
3. **Institutionalising Climate Trajectories.** (named 14 times) Answers in this category referred to the institutionalisation of climate governance through formal decisions which were motivated by the membership in TMCNs. These can be formal documents such as climate strategies or the creation of positions (e.g., climate manager) in the administration which were argued for by referring to the TMCN membership. This means that a municipality is set on a track towards improved climate governance from which it cannot deviate too much.
4. **Enabling direct exchange between members.** (named 14 times) TMCNs impacts were also linked to the positive effects of direct exchange between staff from member cities. This category encompasses peer-learning, direct cooperation between staff members of different cities and the motivational effects delegates from cities gain from visiting network conferences. It differs from the Platform function of Framework A in that it does not refer to the presentation of best practice examples or green city branding where sender and recipient of these messages do not directly interact.
5. **Offering project support.** (named 14 times) The fifth impact of TMCNs, which was named repeatedly, was project support. All TMCNs investigated in this research project command their own infrastructure through which they can directly help members to implement projects, activities or other climate governance related measures. It directly corresponds to the Consultant function of Framework A.

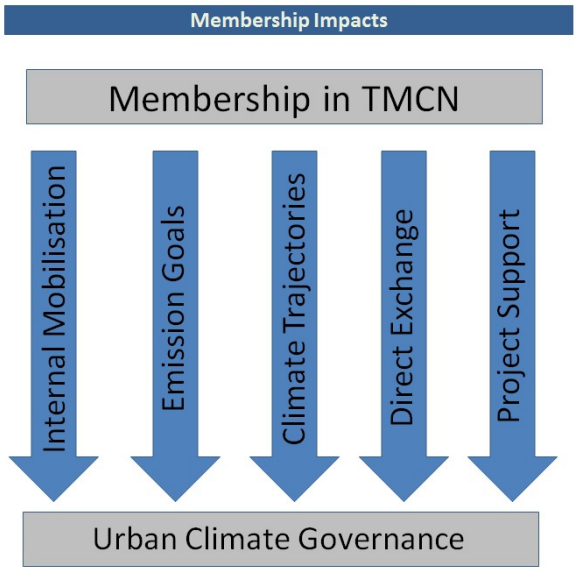

Figure 2. Framework B: Usage of TMCN
This framework shows the main ways in which TMCN membership is used in urban climate governance

To further understand how TMCN membership influences climate governance, it was necessary to take a closer look at where these different types of impacts actually become effective (further reflections on this can be found in the Discussion section below). The first three categories, which were the most frequently addressed, refer to local processes that do not require direct interaction with the networks. The two last categories, Direct Exchange and Project Support, however, require the direct interaction with the networks.

Other Uses of TMCNs and Green City Branding

The reasons why actors in urban administrations strive for membership of their city in TMCNs can differ. In many cases, the membership seems to be based on a genuine wish to address climate change, but my informants also named other reasons. For example, one of the informants stated that the Covenant of Mayors can be seen as "a club of mayors who like to travel" and several TMCN staff members have stressed the potential for green city branding a membership offers.

Based on Germany's reputation as a leading country in terms of environmental and climate initiatives, the literature on place branding and the way TMCNs describe the benefits of city branding through TMCN channels, I

expected to find that actors in German cities used their membership for green city branding purposes. However, the analysis showed very little indication of widespread use of TMCNs as platforms for green city branding among German TMCN member cities (more on this can be found in Article II).

Actors in German cities seemed in general not overly eager to create green city brands. With the exception of Bonn, no city with a coherent branding strategy was found. The most compelling explanation for this is the cities' administrative set-up and division of responsibilities. Those city officials who actually work with TMCNs do not necessarily have the interest in or the responsibility to work with green city branding, which might be motivated (and pushed for) by actors from higher administrative levels. To accommodate the needs of policy tourists and delegations from other cities, the host city has to invest resources (Busch & McCormick, 2014). This is problematic if these visits have to be coordinated and organised by departments which have other goals and duties. One interviewed climate manager reported that the staff at her department (climate protection) had decided to only accept visits by delegations from official partner cities, since visits require a lot of resources and preparation by the host while providing only marginal benefits for the city. For further details see Article II.

Even though there was very little indication of green city branding among the German TMCNs members, the case of Bonn can shed some light on the question of how place branding, as a motivator for TMCN membership, can influence local governance.

The example of Bonn shows that the administrative setup of cities matters in regards to how actors in cities use membership in TMCNs for green city branding purposes. In Bonn, the TMCN engagement is divided into two different branches. The *Leitstelle Klimaschutz* (Division of Climate Protection) works with Climate Alliance, while the *Amt für Internationales und globale Nachhaltigkeit* (Department of International Affairs and Sustainability) is responsible for work with the World Mayors Council on Climate Change and the Covenant of Mayors. Climate Alliance mainly supports their members in improving their climate performance, the World Mayors Council, however, has a profile that is more accommodating for place branding activities (Busch & Anderberg, 2015).

The case of Bonn shows that a successful history of climate policies – which the city has – can be taken up by actors in the city's administration or politicians and used for other purposes. Similarly, Busch and McCormick (2014) found that mayors in rural municipalities with outstanding renewable energy projects recognised that their work became an ex-post opportunity to promote their municipality. However, Bonn's work with climate protection had already started in the early 1990s; during a period when climate protection was hardly viewed as useful for green place branding, which makes it highly unlikely that these climate protection measures were motivated by green city branding considerations.

Interests, Impacts and Agency

The results above show that the processes between the network level and the local level are less important than literature on TMCNs suggests (cf. Andonova et al., 2009; Bouteligier, 2013; Bulkeley et al., 2003). Given previous research, I did not expected to find that the most important impacts actually manifest in processes that take place internally in connection with decision-making processes in cities. This finding reflects the administrative set-up in the majority of German cities: the local climate managers in general are de-facto responsible for the work with TMCNs as was shown by the survey. This is an interesting finding, as several of the networks first and foremost address mayors and not members of the administrations (e.g., Covenant of Mayors, World Mayors Council on Climate Change). However, even if mayors are the actual signatories to these networks, my results show that the actual interest in and impacts of member cities' work with networks are defined and shaped by local climate managers. This means that climate managers can make direct use of the network membership for their own work; namely, for improving local climate governance.

Even if the results of the survey indicate that climate managers generally use TMCN membership for internal climate governance processes, there are important differences between cities and their respective engagement with TMCNs. Three main factors have been identified that affect the way in which TMCN membership plays out: a) who is involved in the decision to become a TMCN member, b) which department deals with the work with TMCNs and c) the resources a respective department commands.

Who is involved in the decision to join networks? This aspect defines which expectations are assigned to the TMCN membership. Many respondents of the survey reported that the formal decision to join TMCNs has to be made by official decision-making bodies of cities, such as local parliaments. However, there are differences in the decision making processes in different cities. In Frankfurt (Main) for example, the staff of the energy department de-facto chose the networks, and higher political bodies followed their suggestion. The staff of this department works directly with the TMCNs. This arrangement seems beneficial for constructive work with the networks, as the degree of involvement with TMCNs corresponds with the resources available to the department and no over-commitment occurs. This example shows that if the decision to join TMCNs is pushed by the actors who work directly with the networks, the problems associated with proxy agency are avoided.

Which departments deal with the work with TMCNs? The case of Bonn illustrates how the work with different TMCNs is carried out differently by the involved departments in a city. The expectations assigned to the membership in Climate Alliance and to the World Mayors Council on Climate Change were

naturally not only shaped by what these networks have to offer, but also by the departments that work with the particular network. The Division of Climate Protection focusses on implementing climate measures in the city and used their membership in Climate Alliance accordingly by, for example, partaking in the bicycling programme (*Stadtradeln*) and by forming regional cooperation with other network members. The Department of International Affairs and Sustainability has the objective to promote the city's sustainability profile internationally and uses the networks for this purpose with the aim of attracting international organisations or conferences. A complex administration can also lead to a situation where the work with TMCNs gets "forgotten". For example, despite several attempts I was not able to get information on the department or person in the city of Berlin which/who is responsible for the work with Climate Alliance.

What resources do the responsible stakeholder(s) command? The resources available to the department dealing with TMCN membership were identified to be of central importance to how memberships are used. On the one hand, several potential informants refused to partake in the survey, on the basis of lacking resources to actively work with the TMCNs their respective cities are members of. On the other hand, other environmental or climate departments in German cities have the resources to send several of their employees to network conferences (e.g., Hannover, Frankfurt (M) and Munich at the European Climate Alliance conference in The Hague, 2013). The identified number of climate managers in the cities of my respondents ranged from one to eleven. The interviewees further confirmed that the more resources a department has, the more it can tap into the potential that TMCN membership offers, apart from the internal processes.

Diverging Interests

The interviews with former and current staff from TMCNs show that the staff of TMCNs and their actions have great impact on how the networks function and how benefits and services are made accessible for actors in cities.

Once networks are institutionalised with staff and infrastructure, their employees develop their own agenda. This agenda might not be fully in line with the actual interests of all relevant actors in member cities. This is especially the case for TMCNs, since they are often not fully financed by membership fees, but need to access other funding sources to maintain staff and infrastructure. This can create tensions because the interests of TMCN funding bodies and TMCN members might not coincide with each other. For example, many informants from city administrations expressed their disappointment with their membership in the Covenant of Mayors, as it had not provided as many tangible benefits as other TMCNs. A reason for this was described by one informant from a Dutch member

city of Climate Alliance and the Covenant of Mayors, who stated that the Covenant is a way for the Climate Alliance and Energy Cities to indicate their effectiveness to (potential) funding agencies such as the EU, whereas local actors in member cities might not be at all interested in the public perception of the network. If this indeed was the idea which the Covenant of Mayor is founded upon, it is not surprising that staff of member cities do not feel that their interests are addressed (see Article I). Accordingly, many climate managers stated that they are sceptical towards Mayors Adapt (the Covenant of Mayors' adaptation spinoff) because of their unsatisfactory experience with the Covenant of Mayors.

Another example of diverging interest with negative impacts on TMCNs' local influence was described by an informant from ICLEI working with the CCP. He stated that staff in TMCNs has to react to funding calls to mobilise funding, which are not always fully in line with the initial objectives and ideals the TMCN was founded on. This means that already well-established TMCNs can be pushed away from their core ideas when having to work through projects, external funding and bids. This might create a feeling of estrangement between climate mangers in member cities and TMCNs' staff.

Another interesting finding is the fact that internal decisions and interests within the administration of a transnational network can influence the way in which cities and their climate governance are presented globally. The way in which ICLEI sampled cases for their case study collections favoured certain cities and regions. In fact, European and North American cities were overrepresented in the collection while African cities were underrepresented. A number of cities appeared as "usual suspects", they were very visible and occurred several times in the collection (Betim, Curitiba, Freiburg, Portland, Sao Paulo and Toronto). As a consequence, these cities' approaches were then overrepresented in the network's portfolio. This imbalance might have affected the understanding of sustainable climate governance in research and practice through promoting some approaches while marginalising others (see Article III for details).

A further example of this are the processes of highlighting the work of single network members by the TMCNs (see Article I and III for details), such as network awards of special titles (e.g., "Climate Star" of Climate Alliance or "City of Ambition" of CCP). Some authors have argued that through this internal differentiation, actors within the networks can set norms through proclaiming what is to be regarded as good or best practice (e.g., T. Campbell, 2009). This might affect both the view of practitioners and academics in the field of urban climate governance. However, the results from the survey suggest that these norms do not have an immediate or deliberate effect on the work of climate managers in German cities.

Both examples - best practice and network awards - show that TMCNs have an interest in presenting their members' achievements. This interest is not necessarily shared by their members. My interviews show, for instance, that

network staff has to actively approach staff in German cities to get updated data and best practice examples. Many climate managers do not perceive best practice examples as crucial for their work and do not have the task to represent their city internationally, making them reluctant to invest the extra resources into this activity.

Discussion

In the following sub-sections I discuss the results of my study in relation to the literature on TMCNs and key theoretical concepts (as presented in the Theoretical Background). First, I start by discussing my findings in relation to climate change mitigation and adaptation. Second, I discuss the different impacts of TMCNs and reflect on their measurability and occurrence. Third, I position my research in the multi-level framework of urban climate governance before, fourth, applying the theory of policy entrepreneurship to my results.

Mitigation and Adaptation

I embarked on this thesis project intent on investigating the impact of TMCNs on urban climate governance, including both climate change mitigation and adaptation. Yet, the findings and discussions that follow them presented in this thesis mostly refer back to climate change mitigation. This is not due to a conscious decision to pay more attention to climate change mitigation, but mostly to the way the TMCN scene in Germany is characterised. Many networks started off with a focus on climate change mitigation, and adaptation has only become part of their portfolio in recent years (e.g., CCP, Climate Alliance and the Covenant of Mayors). Climate change mitigation also has a longer standing history in Germany, dating back to a time when it was partly problematic to advocate for adaptation measures (Pielke, Prins, Rayner, & Sarewitz, 2007). This initial focus on climate change mitigation has led to a situation where the work with TMCNs is mostly done by local climate managers who work with climate change mitigation measures, but not always with climate change adaptation measures.

This head start climate change mitigation has in comparison to climate change adaptation is reflected in urban climate governance in Germany. Today, climate change mitigation is more firmly integrated into urban climate governance. The survey shows that, for instance, nearly all German cities (96%) have a climate change mitigation strategy in place, while only about half (47%) have a climate change adaptation strategy. Internally, climate change mitigation and climate change adaptation are sometimes handled by different departments within the

urban administration. This means that even if a TMCN adopts climate change adaptation as an important topic or goal, it does not directly translate into actions at the local level. Particularly if adaptation is linked to another department, which first has to learn how to work with TMCNs. Nevertheless, research has also shown that the mainstreaming of climate change adaptation can be enabled through municipalities' structures and planning processes established for climate change mitigation (Wamsler & Pauleit, 2016).

Climate change adaptation is increasingly perceived as an important task for cities in Germany, and has consequently been increasingly mainstreamed in urban governance (Wamsler, 2015). This also means that an improved understanding of the complex challenges of climate change adaptation is spreading. In the past, while climate change mitigation was seen as a collective task, which required the cooperation of many partners, climate change adaptation was perceived as a task which each city had to address individually and through local measures. This perception is changing and climate change adaptation is increasingly seen as a task that needs to be tackled through wider measures and regional partners (IPCC, 2014). For example, flood risk management requires coordinated measures at higher levels (regional, national, transnational) to avoid a situation where measures in one city cause problems in cities further downstream (Stiller & Meijerink, 2015).

To address both challenges (mitigation and adaptation), staff in city administrations need to find new solutions which integrate both goals (Biesbroek, Swart, & van der Knaap, 2009; Laukkonen et al., 2009). Here the networks can potentially close a governance gap by serving as knowledge hubs that provide support for integrated solutions.

TMCN Impacts, Measurability and Occurrence

Research on TMCNs is always faced with the question of how to measure and quantify the impact of these networks. For example, Fay (2007) finds that there is little data on the actual impact of the CCP on local emissions, while Bulkeley and Newell just call the impact of TMCNs not measurable (2015). Other authors have approached the question of impact through developing and applying qualitative and quantitative indicators. On this basis, Zeppel states that the CCP has "played a significant role in urban climate programmes" (2013b, p. 226) and Hakelberg (2014) concludes that TMCNs have "clearly promoted the spread of local climate strategies among European cities between 1992 and 2009."

This study did not intend to produce a metric with numbers to measure the impact of TMCN membership. Such numbers would inevitably be limited by the question posed and the methodology applied (Adams, 1979), and I doubt that this

could be done in a meaningful way. Instead, my thesis has identified the functions of impact (through quantitative and qualitative means) and has produced a preliminary assessment of how important these functions are from the points of view of local climate managers in German cities who work with TMCNs. This can serve as an alternative indicator of performance, which is a different approach to those that have taken the network(s) as their point of departure (e.g., Bansard, Pattberg, & Widerberg, 2016). This is important, because if we measure performance only based on the perspective of the network and municipal-network interactions, we miss the opportunity to facilitate improved performance of networks on the local level.

Pioneers and Laggards

Literature on TMCNs often makes the distinction between pioneer and laggard cities when describing the members of networks (e.g., Hakelberg, 2014; Kern & Bulkeley, 2009). The metric for which city qualifies as pioneer and which does not is often the performance of the city on the network level and their visibility as climate champions, while the internal use of TMCN membership in local governance processes are missing. This can have implications for how the networks provide services to their members. In the past, pioneers were seen as dominating TMCNs' agenda, culminating in the statement that TMCNs are "networks of pioneers for pioneers" (Bulkeley & Kern, 2006 p.329).

My investigation shows, however, that TMCNs are not (or perhaps *no longer*) networks of pioneers for pioneers. First, there is the spread of memberships amongst small municipalities as is the case for Climate Alliance in Germany and for the Covenant of Mayors (which is particularly strong amongst small municipalities in Spain and Italy). Nearly two thirds of all German members in Climate Alliance are municipalities with less than 50,000 inhabitants (305 of 470). This is different for other networks, like C40 that clearly aim at being a network for world-leading climate pioneers. C40, however, only has two members in Germany. Second, the survey results underline the important role TMCN membership plays in internal decision making processes within cities. The results thus show that networks can have positive impacts on all kinds of cities, not only pioneers or globally visible cities. The TMCN membership can even affect local climate governance in cities that are perceived as "dormant" or laggard because they are invisible on the level of TMCNs, e.g., at network conferences or online presentations. This research has shown that actors in so-called laggard cities can use TMCN membership to encourage local climate change mitigation and adaptation, albeit through processes that may be invisible at the TMCN level. The focus on pioneer cities in research might have led to a situation in which the

impact of TMCN membership on climate governance in these invisible cities has been neglected and thus underestimated.

Funding

Several scholars have pointed out that TMCNs might provide access to funding for climate work in member cities (e.g., Bulkeley et al., 2003; Bulkeley & Kern, 2006; Hakelberg, 2014). For example, Betsill and Bulkeley (2004) find that CCP attracts active members not by serving as a knowledge platform but because of the access it offers to funding. In most cases, this does not refer to funds that are managed by the networks themselves, but networks can be important channels to funding from other sources (e.g., EU funding). One way for the networks to enable this access is through educating staff from cities on how to prepare and submit applications to funding schemes. Workshops on these skills, for example, are held at the European Member Conferences of Climate Alliance and in online seminars. This is an important way for municipalities to access funding for local climate projects. This has been found to be the case cities in Southern Europe (Pablo-Romero, Sánchez-Braza, & Manuel González-Limón, 2015), the Netherlands (Gerritsen, 2016) and the US, the UK and Australia (Betsill & Bulkeley, 2004).

Furthermore, the survey results show that actors in German cities do not see this access to funding as an important function of TMCN membership. One possible explanation for this finding is that sufficient funding is already available through national sources, such as the municipal climate protection initiative or the national energy efficiency initiative (see Research Context section above for details). This situation would make it unnecessary for climate managers in German cities to turn to the EU or other funding bodies. This finding is confirmed by Wamsler and Pauleit (2016), who find that German municipalities tap into international funding for financing climate adaptation work less often than, for example, their Swedish counterparts. This finding runs contrary to the general consensus in the literature. The finding that funding is not necessarily an important function of network membership opens up space to investigate and understand alternative benefits that can result from membership that may be crucial to understanding the role of network membership in internal city politics on climate change, something that will be discussed further in the section TMNCs and multi-level governance below.

Revisiting Green City Branding

Many authors have stressed the importance for cities to develop a brand (Dinnie, 2010). Within this context, green city branding has become a common practice for many cities or regions with a strong track-record in green policies and climate protection. For example, the Öresund Region that includes Copenhagen and Malmö (Anderberg & Clark, 2013), and the city Växjö (Andersson, 2015a) have created strong brands that are internationally known. As demonstrated, green city branding is, however, not a widespread phenomenon in Germany, despite the great potential for these kinds of activities. How can these differences be explained?

In contrast to the named cases in Scandinavia, it seems that German cities do not have the necessary interest or infrastructure in place to translate successful climate policies into green branding messages. Here I present two possible explanations for this lack. Firstly, different departments within the administration of cities might have opposing interests in regards to climate policies. If the issue is not recognised by a broader group of actors within the city, then green city branding might be hard to communicate as the city's coherent brand. I found indication for these different perceptions of climate policies within cities at the conferences of TMCNs that I attended: many speeches and comments by participants referred to the struggles climate managers have to fight in order to push ambitious climate policies within their city. In contrast, the example of Malmö shows that the city's green city branding is based on a coherent green urban development strategy which the entire city administration has embraced (Holgersen & Malm, 2015). A second possible explanation is that the ties between German cities and local (environmental) companies are not as strong as in other countries. The projects in Malmö (mostly in the Western Harbour District) or Stockholm's Hammarby Sjöstad (which is, for example, one of Energy Cities best practice examples) are regarded as lighthouse projects and have been developed in close cooperation with local companies. A similar case in which green urban development projects are linked to local companies can be found in Freiburg. Freiburg is one of the few cities in Germany that seems to have a coherent green city branding strategy. In these cases, green city branding is also used as a strategy to support local companies that work in the field of sustainable urban development or renewable energy (Andersson, 2015b; Freytag, Gössling, & Mössner, 2014; Rohracher & Späth, 2013).

The results presented above raise a second question in regards to green city branding. Namely, if activities that would fit the description of place branding actually *are* acts of place branding. Or put differently: are *unintended* place branding activities actual cases of place branding? I argue that this is not the case. Many actors in cities initiate their climate activities for very different reasons. I found that even the presentation of climate policies can have diverse reasons such as: to learn from each other, to network or to find project partners. In some cases,

the external presentation of good climate policies is not initiated by actors in their respective cities. In the case of Climate Alliance, the presentation of case studies was not initiated by the member cities themselves, but by the staff of the network who constantly contact members to keep the membership profiles and best practice section up to date.

Bulkeley (2013) describes a voluntarism, based on genuine environmental concerns, which leads to ambitious climate policies in cities. These reasons differ significantly from those that motivate place branding such as: attracting visitors, companies and inhabitants. The underlying rationale is a completely different one (doing good climate work versus promoting the city to a global market) and to automatically insinuate place branding motives when cities present their successful climate work hardly seems fair.

The key to explaining several aspects of green city branding and its relation to TMCNs is identifying who the relevant actors are and where agency is located. This would reveal if spreading green city branding messages was initiated by actors in city administrations or staff of TMCNs. Identifying the actors and their interests is essential to understanding intentions behind messages that might or might not be attempts of green city branding.

Best Practice

Best practice examples can shape discourses and perceptions of what is perceived as a good or adequate response to climate change (Fenton & Busch, 2016). The display of best practice examples of member projects was identified to be an important issue for the staff in TMCNs. Best practice sections are part of the webpages of most of the TMCNs investigated here and best practice examples are often presented in TMCN newsletters (Busch & Anderberg, 2015). To reach a broad audience, best practice collections need to display a great variety of different cases. This is confirmed by ICLEI striving to diversify their best practice collection as is shown in Article III.

But what function and audience does the display of best practice examples actually have and whose interests are being served here? Bulkeley and Newell (2015, p.76) state that "there is little evidence, for example, that the recognition and dissemination of best practice leads to action in a direct sense (…)". This indicates that the audience for best practice examples are actually not mainly climate mangers who might get inspired and motivated by looking at achievements in other cities. The results from the survey conducted for this thesis confirm this thought. Rather, the results indicate that this need for information is met by the direct exchange between climate managers and field visits, not through the presentation of best practice cases on TMCN homepages or in other publications.

Climate managers rarely mentioned best practice as an important impact on their work (see Article IV). Further, an informant from Climate Alliance explained that the network is seldom approached by actors from cities who ask for an update on best practice or membership pages of the network's webpage. This information, together with the observation on the use of best practice examples by ICLEI, shows that the driving force behind best practice collections is actually the networks' own staff. Climate managers often have more pressing tasks at hand than updating their city's membership section on a TMCN webpage. This situation draws attention to the possibility that the interests and needs of actors in TMCNs sometimes diverge from those of climate managers.

Despite the fact that staff in German cities seem reluctant to prepare best practice cases, they are well informed about the work of other cities. In the survey, respondents named many other cities as good examples. This might be explained by the fact that staff from different cities do engage in inter-city dialogues and exchanges on climate related issues. This can, for example, be seen with the existing inter-municipal study visits, case presentations during network conferences and informal discussions, e.g., at network conferences where city delegates discuss their climate work. For staff in German cities, these types of exchange with regional peers are more important than best-practice examples on the TMCNs' homepages. There are three explanations for this. First, direct exchange can take place more easily if partners of cooperation can meet in person, which allows for face-to-face communication, etc. with low travel demands. Second, certain projects require geographical proximity of the project partners. Examples for this are energy projects like district heating grids or adaptation projects on flood management. Many municipalities share the responsibility for basic tasks and services like waste management in municipal associations. Third, the federal set-up of Germany means that regulations and funding schemes differ amongst the Federal States. These differences make the experience of regional cases more applicable in a city than the best practice example from a faraway case.

TMCNs and Multi-Level Governance

Local climate governance is often described as having a multi-level character (Bulkeley, 2013; Kern & Alber, 2009; Kern & Bulkeley, 2009; Román, 2010). This means that measures addressing climate change in cities are shaped by decisions at different levels of governance (J Gupta et al., 2015). Most publications on TMCNs stress that these networks are embedded in this multi-level governance system (e.g., Davies, 2005; Oppowa, 2015; Van Egmond, 2011; Zeppel, 2013b) or underline the need to apply a multi-level analysis to understand them (e.g., Betsill & Bulkeley, 2006; Kern & Bulkeley, 2009). Andonova et al.

(2009) however point out that the governance of climate change does not only involve multiple levels of governance, but that it also has a multi-actor nature. Finally, Bulkeley (2010) suggests that we need to introduce alternative theoretical perspectives into the field of TMCN research to address the multi-level character of urban governance of climate change.

Despite these calls for introducing all levels of decision making into the research on TMCNs, the level of individual local actors has so far been neglected. This becomes visible in the way that cities and local administrations are referred to in the literature on TMCNs, particularly the way that agency is assigned. Through my research I found that cities and local administrations, such as energy agencies, are treated as coherent actors with interests (e.g., Davies, 2005; Kern & Bulkeley, 2009; Oppowa, 2015), and thus as entities with collective agency. Thus, the actions of individual actors are overlooked, meaning that investigations of TMCNs have missed out on impacts that take place on the local level - impacts that my research show can be significant for local climate governance. Because of this the picture painted by existing research on TMCNs' benefits (and costs) is incomplete. Consequently, evaluations of TMCNs' influence on climate governance are undervaluing the impact of these networks.

This is not to say that approaches which take other points of departure have not contributed to the knowledge and understanding of TMCNs' local impact. Framework A, which was presented in Figure 1, is a synthesis of former theoretical frameworks on TMCN impact, and has been shown to be valuable for identifying interactions between the local and the network level. However, Framework B, which was developed from the analysis of my empirical data (Figure 2), is more comprehensive, since it takes a wider spectrum of impacts into account. It includes the use of TMCN membership in internal decision making processes on the local level and TMCNs' impacts that are closer to the actual implementation of climate policies. Framework B reflects how actors at the local level utilise their city's membership, while research on TMCNs so far has stressed the multi-level character of urban climate governance and has primarily focussed on the interactions between different levels. As a consequence, the internal processes on one level (in this case the local) have been neglected. My research shows that when examining the intra-level dynamics, we find that local actors use network membership to further local ambitions in ways that are not always captured in the multi-level analysis.

Approaching TMCNs from the point of view of individual agents (here, in most cases, cities' climate managers) does not only reveal overlooked impacts of TMCN membership, but also leads to an alternative framing of TMCNs; from being an actor on the multi-level perspective to being a tool used by local agents. This alternative framing has also been suggested by Oppowa (2015), but his reconceptualization of TMCNs does not go far enough. He still treats the local level or the "city" as the relevant actor we should investigate. Similarly, Bulkeley

(2013, p.102) speaks of "municipalities and other actors". However, based on my results I argue that we should take a further step, and add a level of analysis that centres the individual agent in cities if local impact of TMCNs is our concern.

The main problem with not adequately investigating the individual level is that we risk omitting the fact that cities and city administrations are political arenas where actors make politics and produce governance (J Gupta et al., 2015). My research has shown that actors in cities can use TMCNs in different ways and with different intentions and expectations. The example of Bonn illustrates this fact. In Bonn, different departments with different staff and objectives work with TMCNs. The use of TMCNs as tools in internal processes in cities, as demonstrated in the results section above, illustrates further that cities are not actors with internally coherent agency. This is for instance reflected in the results from the survey where many respondents reported that TMCN membership is used in internal mobilisation processes in the cities – a finding that is reflected in Framework B. Thus, it is important to recognise that cities are spaces of political struggles and contestation if we are not to miss important aspects of how TMCNs affect local climate governance and politics. In this context, it would be important to locate power in the decision making processes in cities and to analyse how TMCN membership can empower actors (*power to*) and spread norms (*power with*) to enhance local climate governance (Partzsch, 2015). However, it was not possible to investigate these processes in detail within the scope of this PhD project.

For understanding the relationship of TMCNs and multilevel governance this has two implications: First, when conducting a multilevel analysis we have to adequately consider the actions of individual actors. Second, we have to acknowledge that entities that interact with different levels of governance do not only affect these interactions taking place between levels. Instead they also have implications for processes which take place within the boundaries of one level of climate governance.

TMCNs and Policy Entrepreneurs

In the context of TMCNs the concept of policy entrepreneurs has often been brought up (Bulkeley, 2010; Hakelberg, 2011; Kern & Bulkeley, 2009; Lee & van de Meene, 2012; Van Egmond, 2011). This literature argues that local policy entrepreneurs are necessary to implement the climate agenda of networks on the local level. However, I have not found any such application of the concept which analyses local processes related to TMCNs in cities, despite scholars' continued calls for it. This indicates that such an application might yield important and novel results. At the same time, the importance of active individuals – independently of

the theory on policy entrepreneurs - for improving urban governance of climate issues has been stressed for mitigation and adaptation alike (Bulkeley, 2013; Lenhart, 2015; Meijerink & Stiller, 2013; Stiller & Meijerink, 2015), which also indicates the relevance of this theory for research on TMCNs.

Thus, the goal of this section is to see if an application of this theory to the German case will yield any further insights. In the following, I discuss my results in relation to Mintrom and Norman's four element model of policy entrepreneurs (Mintrom & Norman, 2009). More precisely, I focus on how TMCN membership can be seen as a tool to assist policy entrepreneurs with these four elements. I also reflect on Kindon's suggestion that *persistence* is an important characteristic of policy entrepreneurship, as well as the assumptions about the motivations of policy entrepreneurs (Kingdon, 1984). It will be shown that insights from this discussion shed light on the motivation that shapes the ways in which TMCN membership is utilised by climate managers in German cities.

Here, theory on policy entrepreneurship is applied to climate managers who are identified as policy entrepreneurs. The results of the survey have shown that TMCN membership plays an important role in internal governance processes in German cities. When I identified the respondents for the survey I found that in the majority of cases, the local climate managers are responsible for working with their cities TMCN memberships. The interviews and the survey confirm that today, climate managers are the actors in urban climate governance who work the most closely with climate governance in general and TMCNs in particular. Consequently, they are the actors in local climate governance who can use their city's TMCN membership to influence the decision making in local climate governance. This involvement of climate managers in local politics was further confirmed by discussions at TMCN conferences in which climate managers talked about their struggles with other departments within the municipal administration.

The results show that urban climate governance is an inherently political process in Germany. Climate managers are often the actors who are most closely linked to these processes and, at the same time, they are in most cases the ones responsible to work with TMCNs. Furthermore, policy entrepreneurs are people who are interested in changing the way things are done in their area of interest (Mintrom & Norman, 2009), and it is generally the objective or mandate of climate managers to initiate transitions (which change the way how things are done) within their municipality. Be it transitions in the local energy systems, transport policies and in adaptation. Consequently, climate managers meet a characteristic of policy entrepreneurs through their job duties. This led me to believe that the concept of policy entrepreneurship can be applied to the data I gathered from climate managers in German cities. This is not to say that climate managers are policy entrepreneurs per se. However, they can become policy entrepreneurs and use their city's TMCN memberships like policy entrepreneurs in situations of political struggles around questions of climate governance.

Social Acuity

Policy entrepreneurs have to be equipped with a good sense for social situations to make use of windows of opportunity. This sense manifests in two ways: they can rely on policy networks and the knowledge these networks provide and second, they must be able to understand the interests, motives and concerns of others in their political context (Mintrom & Norman, 2009). In this context, climate managers can use membership in TMCNs to gain access to knowledge which is not found within their municipality. Access to such outside knowledge can significantly increase the chances of success for policies (True & Mintrom, 2001). In line with this, my data shows that outside knowledge is an important tool for climate mangers in German cities. This is reflected in two of the main categories in Framework B presented in the results section (see Figure 2). In the particular context of these networks it makes sense, however, to differentiate between two different sources of outside knowledge. One source is the networks' own infrastructure and staff which provide *project support* (e.g., in the form of guides that include all necessary material to implement projects and activities). Another source is the expertise and knowledge climate managers find through *direct exchange* with their peers in other cities.

Through *direct exchange* e.g., at network conferences or in other fora the networks provide, climate managers discuss questions of how to best act in regards to conflicts such as power struggles with other parts of the administration. At conferences, these discussions mainly take place in the informal context during conference breaks or during open discussions in workshops and sub-sessions. In this context, TMCNs can help climate managers to establish their own networks of peers (from the same regional context or from a similar age group, for example), which are then used for these kinds of discussions independently of TMCN events. Through these exchanges, climate managers can sharpen their senses for how to best solve or behave in situation of conflict.

Finally, TMCNs can help climate managers identify windows of opportunity. However, these are not windows of opportunity that exist in the local political context. Rather, these are windows of opportunity that exist at other levels of governance. For instance, via newsletters, online seminars or at climate conferences TMCNs inform climate managers about changing legislation on the national or European level, which open windows of opportunity on the local level.

Problem Definition

The way that a problem is defined has great implications for if and how this problem is addressed (Mintrom & Norman, 2009). TMCNs can be used by policy entrepreneurs to draw attention to problems related to urban climate governance.

Betsill and Bulkeley (2004) pointed out that membership in the CCP was used as a tool to legitimise policies for climate protection by actors involved in municipal politics. This is in line with the results of the survey and is reflected by the category *Internal Mobilisation* in Framework B (see Figure 2). *Internal Mobilisation* in cities is supported by the problem framing provided by the networks. For example, climate managers have pointed at the wide proliferation of climate networks to justify that climate change issues become part of their cities' political agendas. After all, many other cities have recognised the problem as becomes visible from their membership status.

Building Teams

Policy entrepreneurs are supposed to be team players who rely on others to successfully pursue their goals. This refers to both the skills policy entrepreneurs find in their direct co-workers and the political support policy entrepreneurs can gain through coalition building (Mintrom & Norman, 2009). Relying on the support of a strong team can be a key to success for climate managers in German cities. My results show two different ways in which team building can occur through TMCN membership. The first refers to the teams which are established within cities. Several survey respondents reported that TMCN membership supported the establishment of new positions in their cities' administrations (e.g., additional climate managers, or changes in task descriptions). This can be used to initiate the recruitment of new staff with required skills to strengthen the city's climate work. For example, an urban administration might lack knowledge in the field of climate change adaptation, as the topic is still rather new to urban climate governance compared to climate change mitigation.

These processes were part of the category *institutionalising climate trajectories* which entails activities that set a municipality on a track towards improved climate governance. The second way is through mobilising a team from outside of the city. Climate managers can team up with peers from other cities to collectively work on projects. These often take place within a regional frame such as federal states or associations of neighbouring municipalities (see section Best Practice above). TMCN conferences can serve as seedbanks for these kinds of projects, as they provide regular opportunities for meetings of climate managers. At these meetings, common ideas are developed and specific expertise is located. According to Mintrom and Norman (2009), teams do not only provide expertise, but also indicate that a broad coalition supports the policies in question. The members of TMCNs form such coalitions. If a climate manager can point at other cities that have for instance committed to an emission reduction goal or have introduced measures successfully, it is probably easier to convince their local decision makers. This form of *direct exchange* can be used by climate managers to

further *internal mobilisation*. In this context, it is of course helpful for climate managers if the networks have a high number of members and if cities similar to the climate manager's city are members.

Leading by Example

To be able to lead by example, policy entrepreneurs have to promote and implement brave policy decisions. Thus, they often face situations where they have to communicate the workability of such policies (Mintrom & Norman, 2009). This includes reducing the perceived risk associated with measures and proposals, as decision makers might be risk averse. TMCNs provide climate managers with access to a bouquet of case studies which can be employed to demonstrate the viability of policies. However, this seems to be less important for climate managers in German cities. Best practice examples did not surface as an important aspect that impacts climate governance. This finding is in line with Bulkeley and Newell (2015, p.76), who state that "there is little evidence, for example, that the recognition and dissemination of best practice leads to action in a direct sense (…)". However, the survey results show that the *direct exchange* with peers in other cities can help communicate the workability of ambitious climate policies. TMCN contacts are in fact used to arrange field-visits from city officials (39 of 61). These field visits can be used to stress the feasibility of climate change policies in a city as they have been proven to be implementable in other places.

Motivation and Persistence

My encounters with climate managers from German cities (either during interviews or climate conferences) seems to confirm King and Roberts' (1992) ideas of altruistic and idealistic motivations. A strong indicator for this is that many current climate managers started working on climate change issues before the topic became a mainstream issue that could be used to further one's career. This spirit is reflected in the founding idea and set-up of Climate Alliance, the TMCN with the highest number of German members. The network was founded in 1990 and its members commit to "act in solidarity with the indigenous people of the Amazon" (Climate Alliance, 2016). During network conferences, many speakers and participants stressed the importance of the motivational effects these conferences have, and how they help to invoke the idealism that is needed to face the political resistance climate managers face in their cities. This form of *direct exchange* gives climate managers the feeling that they are part of a movement or at least a group of dedicated individuals who work towards a common goal and who fight the same battles in their respective cities.

Finally, according to Kingdon (1984) persistence is an important characteristic for policy entrepreneurs. Many German cities have a long standing history of climate protection activities. All cities I visited (Bonn, Bielefeld, Frankfurt, and Hannover) have such a track record and they are identified by their peers as leading examples or pioneers in my survey. My investigations showed that the good performance of these cities is associated with the efforts of one or a few actors in the city administration. These individuals, who often are their cities' climate managers, have been working on climate issues for many years. As pointed out, for climate managers from German cities this persistence does not seem to be based on career prospects but on genuine idealism that is revitalised by *direct exchange* with peers at network conferences

It is interesting to set Kingdon's idea of persistence in relation to Mintrom and Norman's idea of windows of opportunity (Mintrom & Norman, 2009). According to the latter, policy entrepreneurs have to be able to identify windows of opportunity and seize chances when they emerge. However, if we consider that climate managers in German cities have shown persistence in promoting climate policies for many years, it is less a question of identifying the right moment but rather a question of just waiting for it, e.g., when new funding schemes become available. It is also conceivable that windows of opportunity only open because of the persistent work of these individuals.

Conclusions and Contribution

In this chapter, I first synthesise the key findings of this thesis. Then I go on to describe how they contribute to the current body of knowledge on TMCNs. Finally, I present their implications for future research before closing with some concluding remarks.

Key Findings

My research has shown that TMCN membership influences local climate governance in German cities in a number of different ways. Depending on the research focus and theoretical underpinnings taken, different impacts are highlighted and dominate our perception of TMCNs. This is reflected in my thesis: the development of Framework A focused on analysis of the functions that the literature on TMCNs presents. Its four functions (Consultant, Advocacy, Platform and Commitment Broker) reflect the past focus on interactions between actors from different levels of climate governance. Consequently, the importance of the networks and their internal infrastructure is stressed, and agency is located on the network level. This perspective is not "wrong" per-se, but it neglects the level where climate measures are actually implemented. Through the survey and the development of Framework B I aimed to fill this gap. By focussing on climate managers, I incorporated the perspectives of those who work most closely with utilising the TMCN membership. This research focus provided new insights into climate governance processes on the local level. Five functions were identified and incorporated in Framework B: Internal Mobilisation, Formulating Emission Reduction Goals, Institutionalising Climate Trajectories, Direct Exchange and Project Support. These functions reveal how TMCN membership is used by climate managers in local governance processes and what types of uses are most valued.

Furthermore, my research has shown that TMCN membership is not widely used by the municipalities for other purposes than enhancing climate governance. This assessment was based on a broad set of data, and found, for instance, very little indication of the use of TMCN membership for green city branding activities by actors in German cities. This is a surprising finding as the green city branding

literature had me expecting to find that actors in cities frequently use the branding opportunities TMCN memberships offer. Only the city of Bonn shows efforts of green city branding through TMCNs. My analyses further indicate that green city branding practices – independently of TMCNs – are not very wide-spread in Germany. However, Bonn, Heidelberg and Freiburg seem to be interesting exceptions and should be further examined in this regard.

This study also highlights the importance of the administrative set-ups in German cities for the ways in which TMCN membership is used. In nearly all studied cities, climate managers are the actors who are directly engaged in their cities' TMCN membership. There was very little indication of an interest among other actors from the city administration in TMCN membership or an acknowledgement of their use for local climate governance.

Contrary to past research on TMCNs that has focussed on the interaction between different levels of governance, my research reveals that interactions between different levels of climate governance are less important to operational staff in cities than previously depicted in the literature on TMCNs. They see the importance of TMCNs mainly in the context of internal governance processes on the local level. My analysis further reveals that many climate managers seem to be driven by idealism and the genuine desire to improve climate governance in their cities and TMCNs provide a good tool to achieve this goal.

In sum, TMCN membership enables local actors to enhance urban climate governance. The positive aspects that can be drawn from TMCN functions are multifaceted. Although these positive aspects can involve interaction between different levels of governance, climate managers mainly use TMCN membership in local governance processes. Utilising TMCN functions can, however, require considerable resources (like time and funding). This is especially relevant for those functions that involve cooperation with actors outside of one's own city (such as consultancy services from the TMCNs or direct exchange with peers).

Contribution

My findings contribute to the knowledge and understanding of TMCNs and their role in urban climate governance. In the following sub-sections I present the main contributions to the body of literature on TMCNs.

Research Approach

The research approach applied in this thesis allowed for new insights because it differed from previous studies. In the past, research on TMCNs has focussed on theorising the impact of networks based on rather small samples of cities, and articles that investigated TMCNs using a broader sample are scarce (e.g., Bulkeley & Kern, 2006; Hakelberg, 2011). I addressed this gap through my thesis research by gathering data from a large sample. First, all German municipalities with TMCN membership; then all German cities with more than 50,000 inhabitants; then all case studies ICLEI used. This approach provided two main advantages. The first one is that a bias from a case selection is avoided. Researchers may be biased in which cases they pick for investigation, because they are likely to choose those cities which are already visible in research or through media disseminated by TMCNs. They can also be drawn to cities that provide infrastructure to accommodate visiting scholars, like the city of Freiburg. In Freiburg special tours for policy tourists, researchers and interested individuals on local solar energy, urban living labs and environmental achievements can be booked directly through the city's official homepage (Freiburg, n.d.). The second advantage of my approach was that seemingly inactive members were not excluded from the investigation. Even if cities were not visible at network conferences or in media disseminated by TMCNs they were still included in this investigation.

German Context

This thesis provides an overview of TMCNs in Germany: an endeavour that was missing from the body of TMCN literature. It sheds light on the proliferation of the different networks in Germany and shows the potential local impact of these networks, which also offered a solid starting point for the subsequent analyses presented in this thesis. This overview also served as a comparison of the networks in regards to how they fulfil the identified functions of TMCNs. An important result of the survey shows that in Germany, local climate governance is influenced by TMCN membership, confirming earlier findings on their potential. This kind of information had been missing for the German context, and may become valuable for researchers, staff of TMCNs and staff in cities alike.

Frameworks

This study resulted in the development of two new analytical frameworks for studying TMCN impacts. Framework A, the result of a synthesis of the literature on TMCNs, can be applied to analyse the functions of TMCNs that occur from the

interaction between the network and the local level. Framework B, the result of the empirical analyses, constitutes the *magnum opus*, as it directly addresses the overarching research question and puts the spotlight on local governance processes and related key actors in cities. It explains how TMCN membership is used by local actors to enhance climate governance in internal climate governance processes, and thus opens up a new perspective for future research and practice on TMCNs.

Speaking back to Theory

My research has yielded a number of important insights on the use of TMCN membership in internal climate governance in cities. My findings have shown that membership in a TMCN can have an important impact on local climate governance, even if city staff does not actively interact with the network staff or peers from other cities. This calls for a reconceptualization of "dormant" cities in the context of TMCNs, as climate governance might still benefit from TMCN membership even if these cities are not particular visible at TMCN conferences or in publications. This way, TMCN membership can bring forth positive effects for local climate governance in all kinds of cities – even in those that do not have the resources to engage staff in the work with TMCNs.

My findings also speak back to multilevel governance research and theory by showing that institutions and processes that are usually associated with the interaction of different levels of governance also have significant impacts within the confines of one level. Consequently, assessments of these institutions and processes, which solely focus on the interactions of different levels, will miss potential impacts within single governance levels. Framework B offers an analytical tool to close this gap for the role of TMCNs in local climate governance.

Regarding the theory on green city branding, my research underlines that it is important to critically question assumptions about the perceived need of actors in cities to brand their city as is suggested by the literature. This finding also contributes to how we understand green city branding processes and how we can evaluate the importance of this phenomenon.

My effort to use the theory on policy entrepreneurs as an approach to investigate the use of TMCNs by climate managers is novel. It has raised a number of new questions and revealed potential research areas, especially in regards to the role of power and empowerment in local climate governance processes. The concept of Policy Entrepreneurs can be linked to the findings presented in Framework B in many ways. It is conceivable that a deductive approach might yield further relevant insights into the decision making processes in urban climate governance. In this context it might be interesting to investigate how exactly

TMCN membership is used in political debates by local policy entrepreneurs to justify climate policies.

Further, the results of this thesis speak back to the framing of policy entrepreneurs as rational actors acting out of self-interest. My findings suggest that this notion, as described by Mintrom and Norman (2009), can be rejected. Instead, many policy entrepreneurs, in the context of local climate policies, seem to be driven by idealistic and altruistic motives. A future investigation of the motivations and incentives driving these actors should therefore include a broader range of factors than career development.

Future Research

Over the course of this research, new "mysteries" and questions arose that could be addressed in future research. In the section that follows, I will present a number of possible starting points for further investigations on TMCNs. If applicable I make suggestions for possible methodological approaches to these questions and issues.

An interesting side finding of Article I was that strong ties exist between different TMCNs. A further investigation of the institutional links and cooperation between these TMCNs could yield interesting results concerning the ways in which these networks function and influence climate governance. As this phenomenon of inter-network links is to be found on the network and not on the city level, it fell outside of the focus of this thesis.

On the local level, it would be interesting to further investigate if informal networks between staff from different cities have emerged through TMCN contacts. For this purpose, actor network analysis could be employed for making networks between city delegates engaged in TMCNs more visible. It would be particularly interesting to see if these informal networks form around characteristics, such as regional proximity, local challenges or demographical similarities between cities, or if they are rather based on the characteristics of the involved climate managers (e.g., age, education, personal interests).

In addition, it would be worthwhile to test the framework developed to unveil the influence of TMCN membership on local climate governance (Framework B) so as to develop it further. Since it has been developed based on data from Germany it would be important to see how the framework performs in a different national context. This would help answer the question of whether local governance processes are similarly important in other countries or if the interactions between different levels of governance dominate.

Throughout my research I identified a lack of longitudinal studies that investigate how TMCN membership plays out in internal city climate governance

processes. It would thus be interesting to study if there are sequences which define how staff in municipalities use the membership in TMCNs and if "patterns of maturity" can be identified. This would enable staff in cities and at TMCNs to design and adapt their cooperation closer to local needs and development.

Finally, throughout this thesis I have touched upon issues of power struggles within the context of internal governance processes. However, the scope of this thesis did not permit me to explore these processes in depth. It would be a worthwhile endeavour to have a close look at these issues within municipal decision making processes and investigate how they feed back into other governance levels of TMCNs.

Concluding Remarks

My thesis interrogates the role of TMCNs in climate governance. It shows that the functions of TMCNs are multifaceted and that the research perspective taken influences how we perceive them. From the perspective of local climate managers, there are a several benefits that come from network affiliation that have been neglected in literature and in policy-making (at least at the network level). If the ultimate goal of TMCNs is better climate governance, then we should seek to shed light on and promote some of the less explicit benefits and functions of these networks, and work to integrate the perspectives from both the networks and from individual local agents, mostly climate managers. Only then can we tap into the full potential of cities in regards to climate change mitigation and adaptation. This will enable cities to play the important role that actors at the global level – as was made clear in the Paris agreement – envision for them (UNFCCC, 2015).

References

Abbott, K. W. (2012). The transnational regime complex for climate change. *Environment and Planning C: Government and Policy*, *30*(1), 571–590. http://doi.org/10.1068/c11127

Acuto, M. (2013a). City leadership in global governance. *Global Governance*, *19*(3), 481–498.

Acuto, M. (2013b). The New Climate Leaders? *Review of International Studies*, *39*(4), 835–857. http://doi.org/10.1017/S0260210512000502

Adams, D. (1979). *The Hitchhiker's Guide to the Galaxy*. London: Pan Books.

Agora Energiewende. (2016). 2015 war Rekordjahr für Erneuerbare Energien, Stromerzeugung und Stromexport. Retrieved March 1, 2016, from http://www.agora-energiewende.de/de/presse/agoranews/news-detail/news/2015-war-rekordjahr-fuer-erneuerbare-energien-stromerzeugung-und-stromexport/News/detail/

Aldred, R., & Tepe, D. (2011). Framing scrappage in Germany and the UK: from climate discourse to recession talk? *Journal of Transport Geography*, *19*(6), 1563–1569. http://doi.org/10.1016/j.jtrangeo.2011.04.008

Anderberg, S. (2012). Natural Resource Flows and Sustainability in Urban Areas. In *Encyclopedia of Sustainability Science* (pp. 6853–6864).

Anderberg, S., & Clark, E. (2013). The green and sustainable Øresund region: Eco-branding Copenhagen and Malmö. In I. Vojnovic (Ed.), *Sustainability: A global urban context*. East Lansing: Michigan State University Press.

Andersson, I. (2015a). *Geographies of Place Branding - Researching through small and medium sized cities*. Stockholm University.

Andersson, I. (2015b). "Green cities" going greener? Local environmental policymaking and place branding in the "Greenest city in Europe," *4313*(September). http://doi.org/10.1080/09654313.2016.1152233

Andonova, L. B., Betsill, M. M., & Bulkeley, H. (2009). Transnational Climate Governance. *Global Environmental Politics*, *9*(2), 52–73. http://doi.org/10.1162/glep.2009.9.2.52

Andrews, C. J. (2008). Greenhouse gas emissions along the rural-urban gradient. *Journal of Environmental Planning and Management*, *51*(6), 847–870. http://doi.org/10.1080/09640560802423780

Ashworth, G. J., Kavaratzis, M., & Wannaby, G. (2015). The need to Rethink Place Branding. In G. J. Kavaratzis, M., Warnaby, G. Ashworth (Ed.), *Rethinking Place Branding: Comprehensive Brand Development for Cities and Regions* (pp. 1–12). Heildelberg: Springer.

Banerjee, S. B. (2012). A Climate for Change? Critical Reflections on the Durban United Nations Climate Change Conference. *Organization Studies*, *33*(12), 1761–1786. http://doi.org/10.1177/0170840612464609

Bansard, J. S., Pattberg, P. H., & Widerberg, O. (2016). Cities to the rescue? Assessing the performance of transnational municipal networks in global climate governance. *International Environmental Agreements: Politics, Law and Economics*. http://doi.org/10.1007/s10784-016-9318-9

Bauer, H., Gebauer, C., Hertle, H., & Paar, A. (2013). *Klimaschutzdialog Unterstützung und Stärkung der Change Agents*. Heidelberg.

Beeson, M., & Stone, D. (2013). The Changing Fortunes of a Policy Entrepreneur: The Case of Ross Garnaut. *Australian Journal of Political Science*, *48*(1), 1–14. http://doi.org/10.1080/10361146.2012.760526

Betsill, M., & Bulkeley, H. (2004). Transnational networks and global environmental governance: The cities for climate protection program. *International Studies Quarterly*, 471–493. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.0020-8833.2004.00310.x/full

Betsill, M., & Bulkeley, H. (2006). Cities and the multilevel governance of global climate change. *Global Governance*, *12*, 141–159. Retrieved from http://journals.rienner.com/doi/abs/10.5555/ggov.2006.12.2.141

Biesbroek, G. R., Swart, R. J., & van der Knaap, W. G. M. (2009). The mitigation-adaptation dichotomy and the role of spatial planning. *Habitat International*, *33*(3), 230–237. http://doi.org/10.1016/j.habitatint.2008.10.001

Bouteligier, S. (2013). *Cities, Networks, and Global Environmental Governance: Spaces of Innovation, Places of Leadership* (Vol. 1). Abingdon, Oxon: Routledge.

Bryman, A. (2008). *Social Research Methods* (3rd ed.). New York: Oxford University Press.

Bulkeley, H. (2010). Cities and the Governing of Climate Change. *Annual Review of Environment and Resources*, *35*(1), 229–253. http://doi.org/10.1146/annurev-environ-072809-101747

Bulkeley, H. (2013). *Cities and Climate Change*. London: Routledge.

Bulkeley, H., Castán Broto, V., & Edwards, G. A. S. (2015). *An Urban Politics of Climate Change*. Milton Park: Routledge.

Bulkeley, H., Castán Broto, V., Hodson, M., & Marvin, S. (2013). Introduction. In H. Bulkeley, V. Castán Broto, M. Hodson, & S. Marvin (Eds.), *Cities and Low Carbon Transitions* (Revised pa, pp. 1–10). Milton Park: Routledge.

Bulkeley, H., Davies, A., Evans, B., Gibbs, D., Kern, K., & Theobald, K. (2003). Environmental Governance and Transnational Municipal Networks in Europe. *Journal of Environmental Policy & Planning*, *5*(3), 235–254. http://doi.org/10.1080/1523908032000154179

Bulkeley, H., & Kern, K. (2006). Local Government and the Governing of Climate Change in Germany and the UK. *Urban Studies*, *43*(12), 2237–2259. http://doi.org/10.1080/00420980600936491

Bulkeley, H., & Newell, P. (2015). *Governing Climate Change* (2nd ed.). Milton Park: Routledge.

Busch, H. (2010). *Local Success Stories, An analysis of the motivations of municipalities in Germany to support renewable energies*. Lund University.

Busch, H. (2015). Linked for action? An analysis of transnational municipal climate networks in Germany. *International Journal of Urban Sustainable Development*, *7*(2), 213–231. http://doi.org/10.1080/19463138.2015.1057144

Busch, H., & Anderberg, S. (2015). Green Attraction—Transnational Municipal Climate Networks and Green City Branding. *Journal of Management and Sustainability*, *5*(4), 1. http://doi.org/10.5539/jms.v5n4p1

Busch, H., & McCormick, K. (2014). Local power: exploring the motivations of mayors and key success factors for local municipalities to go 100% renewable energy. *Energy, Sustainability and Society*, *4*(1), 5. http://doi.org/10.1186/2192-0567-4-5

Buschmann, P. (2013). *The German Energy (Half)Turnaround*. Lund University.

Campbell, D. (2013). After Doha: What Has Climate Change Policy Accomplished? *Journal of Environmental Law*, *25*(1), 125–136. http://doi.org/10.1093/jel/eqt001

Campbell, T. (2009). Learning cities: Knowledge, capacity and competitiveness. *Habitat International*, *33*(2), 195–201. http://doi.org/10.1016/j.habitatint.2008.10.012

Checker, M. (2011). Wiped Out by the "Greenwave": Environmental Gentrification and the Paradoxical Politics of Urban Sustainability. *City & Society*, *23*(2), 210–229. http://doi.org/10.1111/j.1548-744X.2011.01063.x

CIA. (2015). CIA Factbook. Retrieved March 9, 2015, from https://www.cia.gov/library/publications/the-world-factbook/

Climate Alliance. (2014). Climate Alliance Historical Review. Retrieved from http://www.climatealliance.org/538.html

Climate Alliance. (2016). Climate Alliance - A strong Community for the Global Climate. Retrieved April 24, 2016, from http://www.climatealliance.org/

Curtis, S. (2010). Global cities and the transformation of the International System. *Review of International Studies*, *37*(4), 1923–1947. http://doi.org/10.1017/S0260210510001099

Davies, A. (2005). Local action for climate change: transnational networks and the Irish experience. *Local Environment*, *10*(1), 21–40. Retrieved from http://dx.doi.org/10.1080/1354983042000309298

Dimitrov, R. S. (2010). Inside Copenhagen: The State of Climate. *Gloabal Environmental Politics*, *10*(2), 18–24.

Dinnie, K. (Ed.). (2010). *City Branding - Theory and Cases*. Palgrave Macmillan.

Dodman, D. (2009). Blaming cities for climate change? An analysis of urban greenhouse gas emissions inventories. *Environment and Urbanization*, *21*(1), 185–201. http://doi.org/10.1177/0956247809103016

Doran, P. T., & Zimmerman, M. K. (2009). Examining the Scientific Consensus on Climate Change. *Eos, Transactions American Geophysical Union*, *90*(3), 22. http://doi.org/10.1029/2009EO030002

Emelianoff, C. (2013). Local Energy Transition and Multilevel Climate Governance: The Contrasted Experiences of Two Pioneer Cities (Hanover, Germany, and Vaxjo, Sweden). *Urban Studies*, *51*(7), 1378–1393. http://doi.org/10.1177/0042098013500087

Eurostat. (2016). *Total greenhouse gas emissions by countries*. Luxembourg. Retrieved from Total greenhouse gas emissions by countries

Fawcett, A. A., Iyer, G. C., Clarke, L. E., Edmonds, J. A., Hultman, N. E., McJeon, H. C., … Shi, W. (2015). Can Paris pledges avert severe climate change? *Science*, *350*(6265), 1168–1169. http://doi.org/10.1126/science.aad5761

Fay, C. (2007). Think locally, act globally: Lessons to learn from the Cities for Climate Protection Campaign. *Innovations–A Journal of Politics*, *7*, 1–12. Retrieved from http://www.calgaryurbancampus.ucalgary.ca/innovations/files/innovations/Fay-ThinkLocally.pdf

Federal Ministry for the Environment. (2015). *Merkblatt Förderung einer Stelle für Klimaschutzmanagement*.

Federal Ministry for the Environment. (2016a). Climate - Energy. Retrieved from http://www.bmub.bund.de/en/themen/klima-energie/

Federal Ministry for the Environment. (2016b). Förderprogramme. Retrieved June 11, 2016, from http://www.bmub.bund.de/themen/forschung-foerderung/foerderprogramme/#

Federal Ministry for the Environment. (2016c). Kommunaler Klimaschutz. Retrieved June 11, 2016, from http://www.klimaschutz.de/de/zielgruppen/kommunen

Fenton, P., & Busch, H. (2016). Identifying the "Usual Suspects"—Assessing Patterns of Representation in Local Environmental Initiatives. *Challenges in Sustainability*, *4*(2), 1–14. http://doi.org/10.12924/cis2016.04020001

Florida, R. (2002). *The rise of the creative class: And how it is transforming work. Leisure, community and everyday life*. New York: Basic Books.

Fraundorfer, M. (2016). The Role of Cities in Shaping Transnational Law in Climate Governance. *Global Policy*. http://doi.org/10.1111/1758-5899.12365

Freiburg, S. (n.d.). Solar and Environmental Tours. Retrieved March 3, 2016, from http://www.freiburg.de/pb/,Len/335493.html

Freytag, T. . B., Gössling, S. . D., & Mössner, S. . (2014). Living the green city: Freiburg's Solarsiedlung between narratives and practices of sustainable urban development. *Local Environment*, (March 2015), 37–41. http://doi.org/10.1080/13549839.2013.868872

Friedlingstein, P., Houghton, R. a., Marland, G., Hackler, J., Boden, T. a., Conway, T. J., … Le Quéré, C. (2010). Update on CO2 emissions. *Nature Geoscience*, *3*(12), 811–812. http://doi.org/10.1038/ngeo1022

Gawel, E., Lehmann, P., Korte, K., Strunz, S., Bovet, J., Köck, W., … Wassermann, S. (2014). The future of the energy transition in Germany. *Energy, Sustainability and Society*, *4*(1), 15. http://doi.org/10.1186/s13705-014-0015-7

Gerritsen, M. (2016). *Will Cities Save the Day ?— An Analysis of the Influence of Transnational Municipal Climate Networks on Urban Climate Governance in the Netherlands*. Amsterdam University College.

Gupta, J., Pfeffer, K., Ros-Tonen, M., & Verrest, H. (2015). *Geographies of Urban Governance*. (J. Gupta, K. Pfeffer, H. Verrest, & M. Ros-Tonen, Eds.)*Geographies of Urban Governance*. Cham: Springer International Publishing. http://doi.org/10.1007/978-3-319-21272-2

Gustavsson, E., & Elander, I. (2012). Cocky and climate smart? Climate change mitigation and place-branding in three Swedish towns. *Local Environment*, *17*(8), 769–782. http://doi.org/10.1080/13549839.2012.678319

Gustavsson, E., Elander, I., & Lundmark, M. (2009). Multilevel governance, networking cities, and the geography of climate-change mitigation: Two Swedish examples. *Environment and Planning C: Government and Policy*, *27*(1), 59–74. http://doi.org/10.1068/c07109j

Hakelberg, L. (2011). *Governing Climate Change by Diffusion* (1st ed.). Berlin: Freie Universität Berlin, Forschungszentrum für Umweltpolitik. Retrieved from http://edocs.fu-berlin.de/docs/servlets/MCRFileNodeServlet/FUDOCS_derivate_000000001736/Hakelberg_ffu_report_08-2011.pdf?hosts=

Hakelberg, L. (2014). Governance by Diffusion : Transnational Municipal Networks and the Spread of Local Climate Strategies in Europe. *Global Environmental Politics*, *14*(1), 107–129. http://doi.org/10.1162/GLEP

Hewson, M. (2010). Agency. In *Encyclopedia of Case Study Research*. 2455 Teller Road, Thousand Oaks California 91320 United States: SAGE Publications, Inc. http://doi.org/10.4135/9781412957397

Holgersen, S., & Malm, A. (2015). ”Green fix” as crisis management. Or: In which world is Malmö the world’s greenest city? *Geografiska Annaler: Series B*, *in press*.

Huang, S., Hattermann, F. F., Krysanova, V., & Bronstert, A. (2013). Projections of climate change impacts on river flood conditions in Germany by combining three different RCMs with a regional eco-hydrological model. *Climatic Change*, *116*(3–4), 631–663. http://doi.org/10.1007/s10584-012-0586-2

Insch, A. (2011). Branding the City as an Attractive Place to Live. In K. Dinnie (Ed.), *City Branding - Theory and Cases* (pp. 8–14). Basingstoke: Palgrave Macmillan.

IPCC. (2007). Climate Change 2007 : An Assessment of the Intergovernmental Panel on Climate Change. *Change*, *446*(November), 12–17. http://doi.org/10.1256/004316502320517344

IPCC. (2012). *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. (C. B. Field, V. Barros, T. F. Stocker, & Q. Dahe, Eds.). Cambridge: Cambridge University Press. http://doi.org/10.1017/CBO9781139177245

IPCC. (2014). *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Geneva, Switzerland.

Islar, M., & Busch, H. (2016). “We are not in this to save the polar bears!” – the link between community renewable energy development and ecological citizenship. *Innovation: The European Journal of Social Science Research*, *29*(3), 303–319. http://doi.org/10.1080/13511610.2016.1188684

Kamal-Chaoui, L., & Roberts, A. (2009). *Competitive cities and climate change - OECD Regional Development Working Paper*. Paris. Retrieved from http://www1.oecd.org/governance/regional-policy/44232251.pdf

Karlsch, R., & Stokes, R. (2003). *Faktor Öl - Die Mineralölwirtschaft in Deutschland 1859-1974*. München: C.H.Beck.

Kates, R. W., Clark, W. C., Corell, R., Hall, J. M., Jaeger, C. C., Lowe, I., … Svedin, U. (2001). Sustainability Science. *Science*, *292*(5517), 641–642.

Keiner, M., & Kim, A. (2007). Transnational City Networks for Sustainability. *European Planning Studies*, *15*(10), 1369–1395. http://doi.org/10.1080/09654310701550843

Kern, K., & Alber, G. (2009). Governing Climate Change in Cities: Modes of Urban Climate Governance in Multi-level Systems. In *Competitive Cities and Climate Change, OECD Conference Proceedings* (pp. 171–196). Paris: OECD. Retrieved from http://search.oecd.org/governance/regional-policy/50594939.pdf#page=172

Kern, K., & Bulkeley, H. (2009). Cities, Europeanization and Multi-level Governance: Governing Climate Change through Transnational Municipal Networks. *JCMS: Journal of Common Market Studies*, *47*(2), 309–332. http://doi.org/10.1111/j.1468-5965.2009.00806.x

King, P. J., & Roberts, N. C. (1992). An Investigation into the Personality Profile of Policy Entrepreneurs. *Public Productivity and Management Review*, *16*(2), 173–190.

Kingdon, J. W. (1984). *Agendas, Alternatives, and Public Policies* (2nd editio). Boston: Longman.

Kronsell, A. (2013). Legitimacy for climate policies: politics and participation in the Green City of Freiburg. *Local Environment*, *18*(March 2015), 965–982. http://doi.org/10.1080/13549839.2012.748732

Lang, D. J., Wiek, A., Bergmann, M., Stauffacher, M., Martens, P., Moll, P., … Thomas, C. J. (2012). Transdisciplinary research in sustainability science: practice, principles, and challenges. *Sustainability Science*, *7*(S1), 25–43. http://doi.org/10.1007/s11625-011-0149-x

Laukkonen, J., Blanco, P. K., Lenhart, J., Keiner, M., Cavric, B., & Kinuthia-Njenga, C. (2009). Combining climate change adaptation and mitigation measures at the local level. *Habitat International*, *33*(3), 287–292. http://doi.org/10.1016/j.habitatint.2008.10.003

Lee, T., & van de Meene, S. (2012). Who teaches and who learns? Policy learning through the C40 cities climate network. *Policy Sciences*, *45*(3), 199–220. http://doi.org/10.1007/s11077-012-9159-5

Lenhart, J. (2015). *Urban Climate Governance - The Role of Local Authorities*. Wageningen University.

Lindseth, G. (2004). The Cities for Climate Protection Campaign (CCPC) and the framing of Local Climate Policy. *Local Environment*, *9*(4), 325–336. http://doi.org/10.1080/1354983042000246252

Lucarelli, A., & Berg, P. O. (2011). City branding: a state-of-the-art review of the research domain. *Journal of Place Management and Development*, *4*(1), 9–27. http://doi.org/10.1108/17538331111117133

Maria, V., Rahman, M., & Collins, P. (2013). Urban Heat Island Effect: thermal response from different types of exposed paved surfaces. *International Journal of Pavement Research and Technology*, *6*(4), 414–422. http://doi.org/10.6135/ijprt.org.tw/2013.6(4).414

Marin-Aguilar, J. T., & Vila-López, N. (2014). How can mega events and ecological orientation improve city brand attitudes? *International Journal of Contemporary Hospitality Management*, *26*(4), 629–652. http://doi.org/10.1108/IJCHM-03-2013-0117

Max-Neef, M. (2005). Foundations of transdisciplinarity. *Ecological Economics*, *53*(1), 5–16. http://doi.org/10.1016/j.ecolecon.2005.01.014

Meijerink, S., & Stiller, S. (2013). What kind of leadership do we need for climate adaptation? A framework for analyzing leadership objectives, functions, and tasks in climate change adaptation. *Environment and Planning C: Government and Policy*, *31*(2), 240–256. http://doi.org/10.1068/c11129

Mintrom, M., & Norman, P. (2009). Policy entrepreneurship and policy change. *Policy Studies Journal*, *37*(4), 649–667. http://doi.org/10.1111/j.1541-0072.2009.00329.x

Mintrom, M., & Vergari, S. (1996). Advocacy coalitions, policy entrepreneurs, and policy change. *Policy Studies Journal*, *24*(3), 420–434. http://doi.org/10.1111/j.1541-0072.1996.tb01638.x

Moolna, A. (2012). Making Sense of CO 2 : Putting Carbon. *Global Environmental Politics*, *12*(1), 1–8.

Moses, J., & Knutsen, T. (2007). *Ways of Knowing: Competing Methodologies in Social and Political Research*. New York: Palgrave McMillan.

Oppowa, S. (2015). *Governance, Functions, and Traits of European Transnational Municipal Networks – an Evaluation by Means of German Member Cities*. Uppsala University.

Oreskes, N. (2004). The scientific consensus on climate change. *Science*, (January). Retrieved from http://www.sciencemag.org/content/306/5702/1686.short

Ostrom, E. (2014). A polycentric approach for coping with climate change. *Annals of Economics and Finance*, *15*(October 2009), 97–134. http://doi.org/doi:10.1596/1813-9450-5095

Pablo-Romero, M. del P., Sánchez-Braza, A., & Manuel González-Limón, J. (2015). Covenant of Mayors: Reasons for Being an Environmentally and Energy Friendly Municipality. *Review of Policy Research*, *32*(5), 576–599. http://doi.org/10.1111/ropr.12135

Partzsch, L. (2015). Kein Wandel ohne Macht - Nachhaltigkeitsforschung braucht ein mehrdimensionales Machtverständnis. *Gaia*, *24*(1), 48–56. http://doi.org/10.14512/gaia.24.1.10

Pielke, R., Prins, G., Rayner, S., & Sarewitz, D. (2007). Climate change 2007: lifting the taboo on adaptation. *Nature*, *445*(February), 597–598. Retrieved from http://www.nature.com/nature/journal/v445/n7128/abs/445597a.html

Quitzow, L., Canzler, W., Grundmann, P., Leibenath, M., Moss, T., & Rave, T. (2016). The German Energiewende - What's Happening? Introducing the Special Issue. *Utilities Policy*, 1–9. http://doi.org/10.1016/j.jup.2016.03.002

Rohracher, H., & Späth, P. (2013). The Interplay of Urban Energy Policy and Socio-technical Transitions: The Eco-cities of Graz and Freiburg in Retrospect. *Urban Studies*, *51*(7), 1415–1431. http://doi.org/10.1177/0042098013500360

Román, M. (2010). Governing from the middle: the C40 Cities Leadership Group. *Corporate Governance: The International Journal of Business in Society*, *10*(1), 73–84. http://doi.org/10.1108/14720701011021120

Satterthwaite, D. (2008). Cities' contribution to global warming: notes on the allocation of greenhouse gas emissions. *Environment and Urbanization*, *20*(2), 539–549. http://doi.org/10.1177/0956247808096127

Schreurs, M. a. (2008). From the Bottom Up: Local and Subnational Climate Change Politics. *The Journal of Environment & Development*, *17*(4), 343–355. http://doi.org/10.1177/1070496508326432

Schroeder, H., & Lovell, H. (2012). The role of non-nation-state actors and side events in the international climate negotiations. *Climate Policy*, *12*(1), 23–37. http://doi.org/10.1080/14693062.2011.579328

Stern, N. (2009). *A Blueprint for a Safer Planet*. London: Bodley Head.

Stewart, I., Cohen, J., & Pratchett, T. (2013). *The Science of Diskworld IV: Judgement Day*. New York: Random House.

Stiller, S., & Meijerink, S. (2015). Leadership within regional climate change adaptation networks: the case of climate adaptation officers in Northern Hesse, Germany. *Regional Environmental Change*, *16*(6), 1–13. http://doi.org/10.1007/s10113-015-0886-y

Thorén, H. (2015). *The Hammer and the Nail - Interdisciplinarity and Problem Solving in Sustainability Science*. Lund University.

Toly, N. J. (2008). Transnational Municipal Networks in Climate Politics: From Global Governance to Global Politics. *Globalizations*, *5*(3), 341–356. http://doi.org/10.1080/14747730802252479

Tompkins, E. L., & Eakin, H. (2012). Managing private and public adaptation to climate change. *Global Environmental Change*, *22*(1), 3–11. http://doi.org/10.1016/j.gloenvcha.2011.09.010

True, J., & Mintrom, M. (2001). Transnational networks and policy diffusion: the case of gender mainstreaming. *International Studies Quarterly*, *45*(1), 27–57.

Umweltbundesamt. (2015). *Vulnerabilität Deutschlands gegenüber dem Klimawandel*. Dessau-Roßlau. Retrieved from http://ebooks.cambridge.org/ref/id/CBO9781107415324A009

Umweltbundesamt. (2016). Annual greenhosue gas emissions in Germany. Database, Dessau-Roßlau. Retrieved from https://www.umweltbundesamt.de/themen/klima-energie/klimaschutz-energiepolitik-in-deutschland/treibhausgas-emissionen/emissionsquellen

UNFCCC. Paris Agreement, Paris Climate Change Conference - November 2015, COP 21 32 (2015). Paris. http://doi.org/FCCC/CP/2015/L.9/Rev.1

UN-Habitat. (2011). *Cities and Climate Change - Global Report on Human Settlements 2011. Building Safer Cities: The Future of Disaster Risk*. London.

United Nations Department of Economic and Social Affairs/Population Division. (2012). *World Urbanization Prospects The 2011 Revision*. *Population*. Retrieved from http://esa.un.org/unup/pdf/work/WUP2011_Methodology.doc

United States of America Central Intelligence Agency. (n.d.). CIA Factbook - Urbanization. Retrieved from https://www.cia.gov/library/publications/the-world-factbook/fields/2212.html

Valencia, S. C. (2016). *Caught Between Spaces: Socio-Environmental Vulnerability in Formal and Informal Peri-Urban Bogotá and Soacha, Colombia*. Lund University.

Wamsler, C. (2014). *Cities, Disaster Risk and Adaptation* (1st ed.). London: Routledge.

Wamsler, C. (2015). Mainstreaming ecosystem-based adaptation: transformation toward sustainability in urban governance and planning. *Ecology and Society*, *20*(2), 30. http://doi.org/10.5751/ES-07489-200230

Wamsler, C., Brink, E., & Rivera, C. (2013). Planning for climate change in urban areas: from theory to practice. *Journal of Cleaner Production*, *50*, 68–81. http://doi.org/10.1016/j.jclepro.2012.12.008

Wamsler, C., & Pauleit, S. (2016). Making headway in climate policy mainstreaming and ecosystem-based adaptation: two pioneering countries, different pathways, one goal. *Climatic Change*, 1–17. http://doi.org/10.1007/s10584-016-1660-y

Van Egmond, J. (2011). *Governing Climate Change in Cities : Investigating the Effectiveness of Transnational Municipal Climate Networks*. Maastricht University.

Weidner, H., & Mez, L. (2008). German Climate Change Policy. *The Journal of Environment & Development*, *17*(4), 356–378. http://doi.org/10.1177/1070496508325910

Wiek, A., Withycombe, L., & Redman, C. L. (2011). Key competencies in sustainability: a reference framework for academic program development. *Sustainability Science*, *6*(2), 203–218. http://doi.org/10.1007/s11625-011-0132-6

Wiesemann, E. (2014). *From "Win-Win" to "Lose-Lose" - How Neoliberalism Undermines the Sustainable City - A Case Study of Hamburg*. Lund University.

Wilbanks, T. J., Kane, S. M., Leiby, P. N., Perlack, R. D., Settle, C., Shogren, J. F., & Smith, J. B. (2003). Possible Responses to Global Climate Change: Integrating Mitigation and Adaptation. *Environment: Science and Policy for Sustainable Development*, *45*(5), 28–38. http://doi.org/10.1080/00139150309604547

Zeppel, H. (2012). Governing carbon mitigation and climate change within local councils: A case study of Adelaide, South Australia. *Commonwealth Journal of Local Governance*, (10), 70–85. Retrieved from http://epress.lib.uts.edu.au/journals/index.php/cjlg/article/view/2690

Zeppel, H. (2013a). Carbon Management by Queensland Local Councils: Citizenship for Transitioning to a Low Carbon Future. *Journal of Corporate Citizenship*, *2013*(49), 117–136. http://doi.org/10.9774/GLEAF.4700.2013.ma.00009

Zeppel, H. (2013b). The ICLEI Cities for Climate Protection program: Local government networks for urban climate governance. In T. Cadman (Ed.), *Climate Change and Global Policy Regimes: Towards Institutional Legitimacy* (pp. 217–231). Palgrave Macmillan. http://doi.org/10.1057/9781137006127

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Article I

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Linked for action? An analysis of transnational municipal climate networks in Germany

Henner Busch *

Lund University Centre for Sustainability Studies (LUCSUS) & Lund University Centre of Excellence for the Integration of Social and Natural Dimensions of Sustainability (LUCID), Lund, Sweden

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In times of ongoing urbanisation and unabated climate change, cities face increasing demands for improvements in urban climate change governance. This article investigates the activities of transnational municipal networks that were set up in response to climate change and analyses their potential to influence local climate governance. On the basis of a conceptualisation of transnational municipal climate networks (TMCNs), quantitative data on the proliferation of TMCNs amongst German municipalities were assessed and complemented by a qualitative analysis of scientific and grey literature and interviews. The quantitative analysis reveals a wide proliferation of TMCNs in Germany. Finally, the results show that TMCNs have different profiles which can be categorised into four functions all of which might influence local climate change governance. The functions are 'platform', 'consultant', 'commitment broker' and 'advocate'. It is concluded that TMCNs can play a crucial role in fostering climate governance.

Keywords: transnational municipal networks; climate governance; Germany; climate change; urban transformation

1. Introduction

The great importance of cities in the context of climate change has been recognised by both academia and international organisations (Betsill 2001; Kern & Bulkeley 2009; Rosenzweig et al. 2010; UN-Habitat 2011; Kronsell 2013). Cities are expected to play a major role in relation to climate change mitigation and adaptation. This central role is reflected in the decisions taken by the last Conference of the Parties of the United Nations framework convention on climate change (UNFCCC) in Warsaw (United Nations Framework Convention on Climate Change 2013, see 5b). Cities are challenged in different ways with regard to adaptation. They are vulnerable to climate change as some of the expected effects will impact cities proportionately harder than rural areas. For example, heat waves will have a bigger impact on urban areas due to the heat-island effect (Maria et al. 2013). The same goes for flooding, as the large areas of infrastructure and buildings seal surfaces against storm water infiltration (Forsee & Ahmad 2011). The high density of population and cultural and economic values can, amongst other things, make the impacts of climate change in cities more severe than in rural settings (Wamsler et al. 2013; Wamsler 2014). Despite the fact that per-capita greenhouse gas emissions from urban areas are often overestimated (Satterthwaite 2008; Dodman 2009), cities still constitute leverage points for climate change mitigation (Rosenzweig et al. 2010; UN-Habitat 2011; Bulkeley 2013; Bulkeley et al. 2013). The high concentration of infrastructure and the extent of resource flows in cities allow

*Email: Henner.busch@lucsus.lu.se

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for economies of scale to occur if the urban system is subject to transformation (Kamal-Chaoui & Roberts 2009). Consequently, cities will be disproportionally challenged by climate change adaptation and mitigation needs. However, cities also have great potential to meet these challenges. As local governments, they hold for instance 'considerable authority over land use planning and waste management and can play an important role in dealing with transportation issues and energy consumption' (Betsill & Bulkeley 2006, p.141). Either way, cities will play a major role in finding answers to the challenges posed by climate change.

Despite the immense magnitude of the problem climate change has not sufficiently made it onto the agenda of all cities world-wide. Bulkeley pointed out that 'for the vast majority of the world's cities, climate change is far from being a significant issue' (Bulkeley 2013, p.104). This leads to a situation where climate change is 'ungoverned' in the urban context (Bulkeley 2013). Consequently, improved urban governance in response to climate change is needed.

Several transnational municipal networks (TMNs) that address sustainability challenges have emerged in the last few decades. This article focuses exclusively on those TMNs with a clear climate focus. They will be referred to as transnational municipal climate networks (TMCNs). The two largest networks in terms of members are Climate Alliance and the Covenant of Mayors, which unite several thousand European municipalities in their efforts against climate change. The importance of these networks on local climate governance has been highlighted by a small number of scientific studies which found that TMCNs have the capacity to spread climate change policies amongst their members and thus contribute to the reduction of emissions (e.g. Davies 2005; Hakelberg 2011, 2014; Zeppel 2013a). It is however primarily the impact of TMCNs on higher levels of governance such as national governments or European Union (EU) administration that has been in focus in the past research (Bulkeley et al. 2003; Keiner & Kim 2007; Toly 2008; Kern & Bulkeley 2009). Not surprisingly, Bouteligier stated that TMNs 'are still understudied' (Bouteligier 2013, p. 3).

Many German municipalities are members of TMCNs. Germany is the country with the largest population in the EU and is also the EU's biggest economy and emitter of green-house gases (GHGs) (United Nations 2013). At the same time, Germany was able to make considerable cuts in emissions of GHGs compared with 1990 levels (United Nations 2013). Municipal networks for sustainability in general, and in response to climate change in particular, have a long-standing history in Germany. Both International Council for Local Environmental Initiatives (ICLEI) – Local Governments for Sustainability as well as Climate Alliance have their headquarters in Germany, with Climate Alliance having been founded in Frankfurt am Main in 1990.

Despite the comparatively great attention climate issues receive at different levels of society, the success of Germany in cutting emissions and the widespread membership of TMCNs, no systematic investigation of the impact of these networks in Germany has yet been conducted. This research gap makes Germany an important case study. This article aims at providing the first steps for addressing this research gap.

2. Research questions

This article is part of a larger study which aims to increase knowledge and understanding of the role of TMCNs for urban responses to climate change in Germany. The main research question answered in this article is: What potential influence do TMCNs have in Germany when it comes to responses to climate change in urban areas? Here, influence is widely defined as modifying municipalities' scope of action for their climate policies. This can happen by providing access to new knowledge, by creating a favourable environment for local climate policies or by simply increasing the perceived effectiveness of these policies.

The following sub-research questions contribute to assessing the potential impact:

(1) What is the degree of proliferation of TMCNs in Germany?
(2) How are the TMCNs linked to mitigation and adaptation, respectively?
(3) What kind of functions do TMCNs provide to municipalities, and how can these be categorised with respect to climate change governance?
(4) What impacts of TMNs on local climate governance did earlier studies find for Germany?
(5) How are TMCNs linked to each other institutionally?

A more detailed review of the literature relevant for each of the research questions can be found in Section 5 of this article.

3. Theoretical background: transnational municipal climate networks

Governance research has addressed networks since the late 1990s. Two approaches to networks have emerged (Klijn & Skelcher 2007). According to the first approach, networks constitute arenas of policy making where different stakeholders can come together and partake in political processes outside the restraining procedures of representative democracy. Here, networks are understood as the horizontal dependencies between actors (Hajer et al. 2003). The second approach takes a more critical stance on governance and networks. In this approach, networks are understood as centres of power in which actors with particular private interest can take advantage of structural conditions to steer policy processes (Lowndes 2001). Both approaches share the assumption that the actors within the networks are different with regard to their legal status as well as by the power they hold. Although the local governments within TMCNs differ in size and influence they do not constitute entities from different spheres and all are public actors involved in local policies. Therefore, a more nuanced definition is needed for this article.

Bulkeley et al. (Bulkeley et al. 2003) provided a basic definition of TMNs in the context of sustainable urban development. 'TMNs (...) are networks of municipalities which operate nationally and transnationally, so that TMNs represent and involve cities directly in policy issues at the international and European levels, and across national borders' (p. 236). While this definition helps to give an initial idea of TMNs, it is still very broad and, for example, does not answer questions about the degree of integration of TMNs. An institutionally even broader definition of TMCNs is presented by Keiner and Kim (Keiner & Kim 2007); according to them the term encompasses short-term cooperation between two cities (as long as these cities are located in different countries) or climate competition between European municipalities. Kern and Bulkeley listed three characteristics for TMCNs that can serve as more focussed definitions (Kern & Bulkeley 2009). These characteristics are (a) voluntary membership, (b) networks appear to be 'non-hierarchical, horizontal and polycentric' and thus they constitute a form of self-governance and (c) in contrast to conventional non-governmental organizations (NGOs) the networks do not exclusively focus on lobbying and mobilisation but the de facto implementation of measures through the members (309 f).

Summarising Kern and Bulkeley, I see TMCNs as *institutionalised spaces where local governments from different countries come together as equitable partners in an exchange on climate change related issues*. Furthermore, the investigated TMCNs have to fulfil a specific set of criteria. First, networks must of course be transnational. This does not necessarily mean global but networks have to operate in more than one country. Second, networks must have members in Germany in order to meet the geographical focus chosen for this article. Networks must have a certain level of formality with regard to membership. This means that members gain certain rights upon joining the networks. This could be access to material provided by the network or invitations to annual network meetings. Loose cooperation or conferences are not considered. Additionally, networks must have more than two members and be

currently active. These criteria were applied to adjust the scope to a manageable level while not losing the focus as defined by the research questions above.

The networks that explicitly address climate change include those that were explicitly set up with reference to climate change and those that address climate change-induced disasters. Networks with broader, more abstract objectives – such as sustainable urban development (ICLEI, EuroCities) – and networks that address climate change as a side aspect of other issues were excluded. The term 'transnational' is used in different ways in the body of the scientific literature on TMNs. Most of the publications on this issue come from the political sciences and from researchers who work in international relations. The main difference in various definitions is whether the inclusion of private actors is a necessary precondition for governance to be transnational. Andonova et al. argued that this is the case (Andonova et al. 2009) whereas Risse-Kappen, for example, wrote only about 'non-state agents' (Risse-Kappen 1995). Private actors can become members (often observer status or comparable) in several of the networks investigated; however in this article, their presence is not considered a precondition for constituting transnationality.

The boundaries between different types of networks are often not clear-cut (Keiner & Kim 2007). Institutions that have a name including the term 'campaign' might have much clearer resemblance to the above definition of TMCNs than other networks that include the term 'network' in their name. The former 'Cities for Climate Protection Campaign', now 'Cities for Climate Protection Programme' (CCP), could be seen as an example of this phenomenon. CCP 'only' is labelled as a 'programme' run by a TMN that does not explicitly focus on climate change (ICLEI). However, CCP meets all the requirements for inclusion in this research. Further examples of the absence of clear-cut boundaries between network categories follow in the analysis section of this article. This labelling issue results in a selection of TMCNs for this article that at first sight might seem to be arbitrary.

A further refinement of the concept of TMNs is related to the question of whether these networks constitute agents or if they only act through the agency of their members. For this research, it is assumed that the investigated TMCNs are indeed agents – despite the fact that their authority and legitimacy derive from their members. There are three reasons that justify assigning agency to the TMCNs in question. First, each network is more than the sum of its parts or members; otherwise there is no initial motivation to study the networks. Second, the role networks play in global environmental governance (e.g. UNFCCC negotiations) has been acknowledged by many scholars (Bulkeley et al. 2003; Betsill & Bulkeley 2004, 2006; Andonova et al. 2009; Bouteligier 2013). Lindseth framed the Cities for Climate Protection Programme as 'an actor trying to mobilise and persuade cities to work on climate protection' (Lindseth 2004, p. 326). Lastly, the networks investigated for this article all command at least a basic infrastructure with offices and staff.

The review of the literature on TMCNs above showed that the topic has mostly been addressed by scholars from the political sciences and in particular by scholars in international relations. Consequently, many of the publications focus on the impact TMCNs have on global environmental governance (Bulkeley et al. 2003; Betsill & Bulkeley 2004; Toly 2008; e.g. Andonova et al. 2009; Curtis 2010). Many researchers underline the importance of the multilevel perspective when analysing the impact TMNs have on (European) governance, thus hinting at the several roles TMCNs play simultaneously by (potentially) influencing local, regional, national, EU and even global governance of climate change (Betsill & Bulkeley 2006; Fay 2007). What all the former studies have in common is the focus on issues of climate change mitigation, be it through the profile of networks that were investigated or through a focus on mitigation policies by the researchers.

4. Methodology

This case study builds on different data collection methods. First, a literature review of the relevant articles on TMCNs was conducted to gain an overview of the current research on this issue. The Scientific literature from the last decade was taken into consideration to reflect the ongoing changes in the TMCN landscape and to reduce the amount of literature to a manageable level. The articles were identified through search in Google scholar and the author's home university literature search engine. Search terms for whole article search were 'transnational municipal network(s)', 'city network(s)', 'climate network(s)', 'municipal network(s)', 'municipal climate network(s)' and the respective German translations. Furthermore, snowball sampling was applied starting from the bibliographies of articles and books that were identified through Google scholar and LibHub. Furthermore, the publication lists of key authors that have published in this field were scanned for further results. During the literature review, special attention was paid to how the focus of research has developed over time.

Second, a database of TMCNs active in Germany was compiled. Based on the first database, a second database listing all memberships of German municipalities with these networks was created. These two databases served as a basis for the quantitative analysis of TMCNs' activities in Germany. On the basis of the literature review and the quantitative analysis of the databases, relevant grey literature (e.g. reports, brochures, websites and videos by or on TMCNs) was analysed.

Further data were collected by means of observation at network conferences[1] and seven interviews with key informants among the former and current staff of networks and cities. These interviews served three purposes: (a) in line with transdisciplinary research (Moses & Knutsen 2007; Jerneck et al. 2010; Khagram et al. 2010) to include practitioners into the research process at an early stage by helping to formulate the research questions; (b) to sort out inconsistencies that were encountered when the data for the quantitative analysis were compiled and (c) to help with development of the conceptual framework on network functions.

All German municipalities that are members of TMCNs were considered, but for the qualitative analysis special focus lies on the membership of German larger cities (ger. Großstadt >100,000 inhabitants). By focusing on Germany, a case-specific bias is created and it will only partly be possible to generalise findings from this investigation to a wider international context.

5. Results and discussion

The answers to each of the sub-research questions provide indications that help to address the main research question. To link the many different indications to the main objective of this article, in this section the discussion of each of the findings follows immediately after the presentation of the related results.

5.1. TMCNs in Germany

Eight relevant networks have been identified. An overview of size and focus of the networks can be found in Table 1. These networks differ greatly in the overall size and proliferation in Germany. It should be noted that the number of German memberships is not necessarily proportionate to the networks' overall size internationally. Further differences can be found when looking at who is eligible to join the networks. For example, the World Mayors Council on Climate Change accepts, on an individual membership basis, persons who have at some stage been, or remain, mayors of a city. Here, the focus is much more on individual skills and abilities. Climate Alliance on the other hand is primarily a network of local governments, although it does accept membership from other legal entities too. The homepage of Climate Alliance states that '(...) cities, municipalities and districts as well as provinces, NGOs and further organisations are members of Climate

Table 1. Overview TMCNs active in Germany.

Name	No. of members	No. of members in Germany	Year founded	Initial focus	Current focus	Founded by	Cooperation with other networks	Geographical focus (exceptionally strong)
C40	58	2	2005	Mitigation	Both	Bottom up	ICLEI	Global
Cities for Climate Protection Program (CCP)	176	11	1990	Mitigation	Both	ICLEI – Local Governments for Sustainability	ICLEI	Europe and Middle East (Finland, UK)
Climate Alliance	1403	466	1990	Mitigation	Both	Bottom up	Covenant of Mayors	Mainly Europe (Austria, Germany)
Covenant of Mayors	4981	53	2008	Mitigation	Mitigation	EU, Energy Cities	Energy Cities, Climate Alliance	Mainly EU (Italy, Spain)
Energy Cities	1510	7	1990	Mitigation	Mitigation	Bottom up	Covenant of Mayors	Mainly Europe (France)
Future cities	8	2	2009	Adaptation	Adaptation	Bottom up	-	Northwest Europe
Mayors adapt	105	5	2014	Adaptation	Adaptation	EU, Covenant of Mayors, European Environment Agency (EEA)	Covenant of Mayors, Climate Alliance, EUROCITIES	Mainly EU (Italy, Spain)
World Mayors Council on Climate Change	122	2	2005	Both	Both	Bottom up	Resilient Cities ICLEI/ UNISDR Resilient City	Global
The Making Cities Resilient: 'My City is Getting Ready!' Campaign	1626	1	2010	Adaptation	Adaptation	UNISDR	ICLEI	Global

Note: Both = adaptation and mitigation; UNISDR = United Nations International Strategy for Disaster Reduction.

Alliance.' Amongst the NGOs are local energy efficiency agencies or smaller environmental NGOs. Finally, great differences can be found when looking at the commitments members have to make upon joining the networks. These differ from no binding commitment (World Mayors Council on Climate Change) to the development of a sophisticated climate action plan (Covenant of Mayors).

The large number of members of Climate Alliance can be explained by the historical development of the network. Climate Alliance was founded in Frankfurt (Main), Germany, in 1990 by 12 municipalities from Germany, Austria and Switzerland, 6 indigenous NGOs and members from other organisations (other NGOs, university) (Climate Alliance). In its early years Climate Alliance was a German-speaking network and had strong ties to the German development assistance scene. Not surprisingly, the networks' strongholds are the two German-speaking countries, Germany and Austria, with 466 and 960 members, respectively, out of a total of 1661 European members.

The fact that the TMCNs with most members (Covenant of Mayors, Energy Cities and Climate Alliance) are active in Germany can be seen as a first indication of the influence these networks have on German municipalities.

In Germany, 488 local or regional bodies are organised in one or more of the 9 climate networks. Most of them are municipal level entities. However, 29 districts, as well as 2 associations of municipalities located along river catchments (Lippe and Emscher), have also acquired membership. These 488 entities account for more than 44.5 Mio inhabitants (double counting eliminated). This means that more than half the German population live in areas in which the local government is a member of at least one of the networks. The database shows a wide proliferation of the networks amongst major cities in Germany. The 32 biggest German cities are members of at least one of the networks. Of the biggest 50 German cities, 48 hold at least one membership and of all 76 German cities with more than 100,000 inhabitants, 68 are organised in at least one of the networks. Of these cities, three have a special status as they constitute Federal States, which in turn encompass several local governments; these are Berlin, Hamburg and Bremen. Nevertheless, most local governments that hold membership (314 of 488) are rather small, with less than 50,000 inhabitants each.

These 488 governments have a total of 552 memberships of the 9 identified networks. 41 governments have more than one membership. This group is dominated by major cities. Only 12 of these governments have less than 100,000 inhabitants. This accounts for 30% of the governments that have more than one membership. Municipalities with less than 100,000 inhabitants account for 80% of the population of all the municipalities holding membership of a network.

Thirteen cities are members of more than two networks. These are (in order of increasing population): Worms (3), Heidelberg (5), Rostock (3), Freiburg im Breisgau (5), Aachen (3), Karlsruhe (3), Münster (3), Bonn (5), Hannover (4), Stuttgart (4), Frankfurt am Main (3), München (4) and Berlin (4). All but one (Worms with 80,000 inhabitants) of these cities have more than 100,000 inhabitants and all are members of the two most dominant networks in Germany, namely, Climate Alliance and the Covenant of Mayors. In the case of Heidelberg, it should be noted that the city also acquired the title 'City of Ambition' within the Cities for Climate Protection Programme. While single cities seem to have taken a very active role by joining many networks simultaneously, the great majority (448) of municipalities in Germany are members of only one network.

These numbers show that TMCN membership is widespread in Germany. More than half the German population live in municipalities or cities which have joined at least one of the networks. In addition, some cities are members of several networks. The wide proliferation of networks amongst German municipalities in general and cities in particular can also be regarded as an indication of the potential that these networks

might have in addressing the insufficiencies of urban climate governance.

5.2. TMCNs – adaptation and mitigation

Most networks initially focussed on mitigation or a combination of mitigation and adaptation (see Table 1). The two largest networks that account for the vast majority of memberships in Germany were initially founded as pure mitigation networks. Until recently, adaptation alone does not seem to have been motivated enough for the establishment and wide proliferation of TMCNs. What has brought about this development? Firstly, historic reasons have contributed to this imbalance. Mitigation was on the agenda of policy makers in Europe before adaptation entered the stage (Wilbanks et al. 2003; Bulkeley 2010). Mentioning adaptation was morally problematic as it indicated acceptance of the inevitability of climate change and thus questioned the legitimacy of mitigation efforts (Pielke et al. 2007). The last decade or so has seen a change in the debate; adaptation has not only become an acceptable topic (Adger et al. 2009) but, as global climate negotiations stalled and alarming information emerged regarding the prospects for climate change, it has become a necessity (IPCC 2007).

Secondly, mitigation measures are in many cases similar in different settings (e.g. fostering energy-efficiency or development of renewables). Adaptation measures, however, are often perceived as tailor-made according to local conditions (Wamsler 2014). This perceived 'individuality' of adaptation measures might make the transfer of knowledge on this topic in the setting of TMCNs much more complicated.

Thirdly, mitigation and adaptation are two very different goods in the economic sense of the term. Following Elinor Ostrom's reasoning, one could frame adaptation as a private good that benefits only a certain group of people, namely, the inhabitants of a municipality (Tompkins & Eakin 2012). Others who live outside the municipality's borders are excluded from using it. Mitigation on the other hand can thus be framed as a public good to which everybody has access. At the same time, the provider of this public good, namely the municipality that cuts emissions, benefits only marginally from the mitigation measures it adopts. TMCNs could in this context serve in two ways:

(1) The great number of other municipalities could work as an indicator of climate solidarity. Knowing that others are on board creates the notion of being part of a bigger movement.
(2) Municipalities that join a network openly commit to the goal of cutting emissions. Therefore, it is much less likely that these municipalities will indulge in free-riding behaviour (Fay 2007).

Several networks started off as combined mitigation and adaptation networks. Besides these mixed networks, a development of recent years is that networks that initially were pure mitigation networks have taken adaptation into their portfolio. Climate Alliance, for example, has participated in a number of climate change adaptation projects. In cooperation with the EU, the Adaptation and Mitigation - an Integrated Climate Policy Approach project was implemented (Climate Alliance 2005) from 2005 to 2010 and, currently, the Klima Scout Project is being executed in cooperation with the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and the Umweltbundesamt (Climate Alliance 2012). This cooperation can be seen as a further indicator of the recognition of the networks' importance in environmental governance by other than local actors in the European multilevel system (Betsill & Bulkeley 2006).

Moreover, climate change adaptation was taken up by networks that do not exclusively focus on climate change related topics or that were initially not at all concerned with climate change. Two examples for the first are the UNISDR Resilient Cities Campaign and ICLEI – Local Governments for Sustainability. These networks include climate change adaptation as one

aspect of their wider objectives. For the Resilient Cities Campaign, the issue of climate change adaptation is part of their approach to make cities more resilient (UNISDR 2012), while ICLEI includes responses to climate change as part of the transition towards sustainability that their members have committed themselves to initiate (ICLEI). ICLEI also hosts a number of sub-networks and projects that are concerned with climate change. The most important of these ICLEI-run sub-networks in the context of climate change is the Cities for Climate Protection Programme (CCP). As ICLEI constitutes a kind of meta-network which acts through sub-networks, it was not considered in this investigation. An example of a network that was founded for entirely different reasons would be the Union of the Baltic Cities (UBC). On the homepage of UBC, the network is described thus 'Union of the Baltic Cities is a voluntary, proactive network mobilizing the shared potential of over 100 member cities for democratic, economic, social, cultural and environmentally sustainable development of the Baltic Sea Region' (http://www.ubc.net/). As this description shows, climate change is not in the main focus of this organisation. However, it does concern itself with these issues in the form of, e.g., setting agendas of network meetings accordingly or by providing links on their websites to other transnational municipal (climate) networks such as ICLEI, Climate Alliance or Energy Cities. Like ICLEI and EURO Cities, the UBC network was not considered for the quantitative investigation for this article.

The historic development of TMCNs shows a first wave of mitigation networks in the early 1990s and a second wave around the mid-2000s that brought the adaptation issue onto the climate network agenda. This suggests that the accumulated impact of the networks is more established and probably much more important in relation to mitigation than adaptation. The realisation that networks which formerly focussed only on mitigation have adopted the topic of adaptation can furthermore be viewed as a testament of the expansion of the networks' sphere of influence and the general advancement in the issue of climate change adaptation (Wamsler 2014). The recently (March 2014) launched Mayors Adapt, which serves as an adaptation complement to the Covenant of Mayors, is further proof of this development. Thus, the trend towards more adaptation on the agenda of TMCNs continues.

5.3. Functions of TMCNs

In the following section, a conceptualisation of TMCNs is undertaken. This conceptualisation is a synthesis based on the literature review and on an analysis of the collected empirical material.

A rather general definition of TMCN functions is provided by Andonova et al. Three different 'functional categories' for all kinds of different networks in the context of transnational climate governance have been identified (Andonova et al. 2009). The functional categories are: information-sharing, capacity-building and implementation and rule-setting. The first category, information-sharing, can be divided into two sub-functions, one for external use beyond the network's structures and the other for internal use within the network's structure. The external use of information may be seen 'as a tool of political leverage' (Andonova et al. 2009, p. 63) when it is used to exert pressure on actors outside the network such as nation-states. If the internal use of information is accepted as authoritative and is used to steer members within the network in their political decision-making, it may be framed as a form of internal governance by the networks. Networks that use information in these ways include, e.g. advocacy networks and epistemic communities. The second functional category is capacity-building and implementation, which includes the provision of resources through networks. These resources can be anything such as 'financial resources, expertise, labour, technology or monitoring' (Andonova et al. 2009, p. 64). Within these

networks, processes of negotiating the flow of these resources take centre-stage. The third functional category is rule-setting by governance networks. In this kind of network, rules are developed and members voluntarily commit to these rules. The authors pointed out that the functional categories are not mutually exclusive and that networks might be characterised by all three functions. In the case of the TMCNs that were investigated for this article, this definitely seems to be case. While this typology is probably the best available for analysing transnational climate networks, it has a disadvantage that makes it inadequate for this article. This disadvantage lies in the way in which the authors locate actors. The 'three functional categories' they identify were derived 'by considering the way in which networks steer members towards particular public purposes' (Andonova et al. 2009, p. 63). This rather passive view of the members of the network is confirmed in p. 64, where the authors speak about The Climate Group, a hybrid network consisting of public and private members. Here, the authors write about 'governing constituents' and again 'steer constituents'. Bouteligier sorted the literature on TMNs into two different groups: studies that see cities as spaces and those that see them as actors (Bouteligier 2013). I acknowledge that networks assume actor status on their own. However, I argue that members of a TMCN retain their agency and increase rather than decreasing their scope of available options upon joining a TMCN. Even if Andonova et al. did not intend to negate cities' actor status their focus on the networks (and not the members) makes their typology inappropriate for this article. Furthermore, the categorisation of 'information sharing' seems to be too broad for a sensible application to TMCNs. Internal information-sharing and external information-sharing are in the case of TMCNs fundamentally different functions with very different requirements. Combining them in one sole function is inadequate for the purpose of investigating the networks' impact on the local level.

After analysing the available literature on TMNs, Bouteligier came to the conclusion that 'few generalizable analytical frameworks have been formulated so far' by the literature that focuses on cities as actors within networks (Bouteligier 2013, p. 48). In speaking of TMN goals, she identified three functions that are similar to the Andonova et al. framework: '(1) exchange information, knowledge and best practices; (2) increase cities' capacity; and (3) voice cities' concerns in the international arena'. However, no framework is developed from this analysis of TMNs goals.

The analysis of the identified functions of TMCNs, which was conducted for this article led to a refined categorisation that assists, first, in bringing some degree of order into a slightly confusing field of research where geographical and functional overlaps occur. Secondly, it helps us to understand these overlaps by identifying whether networks work in a complementary way, or whether they compete in the same niche. Thirdly, a categorisation provides a first understanding of what incentives municipalities have to join networks. As this framework is based on the analysis of both the empirical material and the literature in this field there is, of course, an overlap with frameworks developed by other researchers, the most important being those of Toly and Andonova et al. (Toly 2008; Andonova et al. 2009).

A first attempt to categorise the networks active in Germany can be found in Table 1. While this provides a first overview of the networks' general characteristics, it does not reflect the actual activities undertaken by the TMCNs. From an analysis of these activities four main functions emerged. These will be used in further categorisation and analysis of the networks that were investigated for this article (see Table 2). These functions are:

(1) Networks as platforms,
(2) Networks as consultants,

Table 2. Functions of TMCNs.

Name	Networks as platform	Networks as consultants	Commitment brokers	*City advocates*
C40	High	Low	Medium	Medium
Cities for Climate Protection Program (CCP)	Low	High	Medium	High (through ICLEI)
Climate Alliance	High	High	Medium	High
Covenant of Mayors	Medium	High	High	-
Energy Cities	High	High	Low	Medium
Future cities	High	Medium	-	-
Mayors Adapt	High	Medium	-	-
World Mayors Council on Climate Change	High	High (through ICLEI)	Medium	High
The Making Cities Resilient: 'My City is Getting Ready!' Campaign	High	Medium	-	Medium

Notes: Networks as platforms – low: public membership list; medium: + best practice examples are advertised; high: + regular member conferences.
Networks as consultants – low: some information material for members is available; medium: + networks have produced their own material and offer access to their members; high: + members are accompanied by network staff in their implementation processes.
Networks as commitment brokers – low: members commit to abstract mitigation goals; medium: + members commit to concrete (quantifiable) goals / criteria from "high" on a voluntary basis; high: + progress by members is reported and reports are accessible by other members.
Cities' advocate – low: networks talk about national/international global climate governance; medium: + networks actively lobby on national or international level; high: networks are present at high profile conferences such as COP negotiations.

(3) Networks as commitment brokers, and
(4) Networks as *city advocates*.

These functions are not mutually exclusive. The networks investigated have complex activity portfolios and thus can adopt several of these functions at the same time.

Networks as platforms describe the space that networks grant their members to exchange information and know-how amongst themselves. Networks thus become arenas for the horizontal exchange of climate change expertise. Municipalities that spearheaded the implementation of local climate change responses seem to be particularly active in using networks to disseminate information (Kern & Bulkeley 2009). Networks provide this space through, for example, 'best-practice workshops' at their conferences or through member profile pages on the official websites. The space that networks grant their members is mostly associated with learning processes (e.g. Betsill & Bulkeley 2004; Lindseth 2004; Keiner & Kim 2007; Curtis 2010; Bouteligier 2013). Observations at network conferences confirm that this function fosters the exchange of ideas between cities. Naturally, the focus is on communicating best-practice examples and the ways in which these can inspire other municipalities. However, it seems to be at least conceivable that this space is used with different motives. Place-branding (with sustainability achievements) has become an activity many cities and even regions engage in (Dinnie 2010). The Öresund region that encompasses Copenhagen and large parts of densely populated Southern Sweden has for example made a considerable effort to brand itself as green and sustainable (Anderberg & Clark 2012). The special status that some cities can acquire in ICLEI's CCP, namely 'City of Ambition' (in Germany Heidelberg), can be seen as a further indication of the possibility for cities to use the networks as platforms for place-branding activities.

The second function is that of *networks as consultants*. Networks that take on this role actively help their members to achieve their climate protection goals by providing information and supporting members in implementing local solutions. Networks apply different measures when fulfilling this function. Upon joining, members often obtain access to the networks' know-how and management tools. These include specialised software for the assessment of local emissions or 'step-by-step' instructions on how to implement local climate policies (Zeppel 2013a). In providing these services, networks do not rely on their members' infrastructure and know-how but fall back on their 'own' resources. Staff of municipalities reported that the provision of tools and guidelines had influenced the municipal work on climate issues. According to several informants, tools for calculating a city's greenhouse gas emissions were particularly helpful. This vertical transfer of information (network to member) requires a certain degree of formalisation of the network in question. Networks have to have access to independent infrastructure to provide these services. This role also marks the ascension of networks from being a group of members that interact to constituting a separate (legal) entity.

Some networks take on the role of *commitment brokers*. Networks with this function ask their members – usually upon joining – to commit to certain goals with regard to climate change policies. This requires some degree of formalisation of the goals in the form of a resolution or declaration. Municipalities then have to report their own progress to the network, which then communicates it to other members and/or the public. An example of this is the homepage of the Covenant of Mayors, where everyone can find a link to check the members' progress in reaching their committed goals. This creates an atmosphere of transparency and accountability that helps to reduce the fear of free-riding behaviour (Fay 2007; Toly 2008). Interviews with the former and current staff members of networks confirmed the importance of this function. In local politics, the commitment made upon joining the network often played out as an argument in favour of ambitious climate measures. Given the nature of the issue this mainly refers to climate change mitigation policies.

Last but not least, some networks assume the function of *city advocates*. In this role, networks lobby for their members' interest at higher administrative levels, such as nation states or the EU. Many TMCNs keep offices in Brussels (Energy Cities, Covenant of Mayors and Climate Alliance) and the Covenant of Mayors as well as Mayors Adapt are officially supported by the European Commission. Staff from Networks also attend international conferences such as the Conference of the Parties (COP). In this way, local governments are enabled to leapfrog administrative and political hurdles and gain added importance in the arena of global climate governance (Toly 2008; Andonova et al. 2009). Just like the *networks as consultants*, the *advocate* role requires a certain degree of infrastructure and formalisation. By assuming a mandate from their members networks challenge conventional ways of government and shape climate governance that takes place on several levels simultaneously (Bulkeley et al. 2003; Bulkeley & Betsill 2005; Davies 2005; Betsill & Bulkeley 2006; Kern & Bulkeley 2009). An example of this in Germany is the statement issued by Climate Alliance after its national conference in November 2014. After a long discussion during the conference on the course of the energy transition in Germany, the delegates of member municipalities arrived at a common position. The resulting statement entails demands and suggestions for the reformation of the national legal framework on questions of energy. The statement was then published by the network and distributed to relevant media outlets.

These four functions are based on the activities that networks undertake. Additional functions that members assign the networks have not been taken into account for this article. Of these 'place branding', the 'use of membership as an argument in local politics' and 'network activities as motivational factor for climate managers' deserve further attention. However, these lay outside of the scope of this article. Therefore, this list may not be

conclusive when looking at how cities make use of their membership. Furthermore, the boundaries between the different functions are not necessarily clear-cut and, in particular, the two information-sharing functions (*networks as platforms* and *networks as consultants*) may go hand in hand, as networks rely on the achievements of their members when designing policy recommendations for other members. However, the four functions that emerged from the analysis can serve as a helpful heuristic when analysing network activities. All 9 TMCNs that were considered in this article were investigated on the basis of their functions. All networks' functions have been classified according to the degree of their involvement. The tree classifications are low, medium and high. The criteria for assigning the classifications, as well as an overview of the networks' performance in the function, can be found in Table 2.

This categorisation has shown that networks can fulfil more than one function simultaneously. The observed functional diversity may be a sign of a multitude of influences that networks may have on several levels of climate governance. Through the combination of different functions, networks develop different profiles. Consequently, the impact may differ from network to network. It also means that municipalities can chose between different profiles of networks. A choice between different profiles enables the municipalities to join a network that addresses their own particular needs more accurately, thereby enhancing the impact made by networks.

5.4. Impacts – the literature on Germany

Very few studies investigate cases of impact by TMCNs on their members. Bulkeley found that the Cities for Climate Protection Programme attracts networks mainly by offering financial and political resources and by conferring legitimacy (Betsill & Bulkeley 2004). Kern and Bulkeley suggested that municipalities engaged in these networks are often pioneers that search for an exchange with other pioneers (Kern & Bulkeley 2009). According to Davies, the impact of TMCNs on local governments in Ireland was limited (Davies 2005). Her main conclusion is that this is due to the uncertainty about who is responsible for addressing climate change and on what scale interventions should be made. Zeppel found that the CCP provides a number of benefits to local governments: 'GHG reductions, financial savings, greater awareness of climate change in councils and communities, local leadership and integrated programmes on climate change with key stakeholders and a network of CCP councils' (Zeppel 2013a, p. 223). Based on these benefits the CCP has 'played a significant role in urban climate programmes' (Zeppel 2013a, p. 226). For the Australian context, she found that CCP had been adopted by 238 local councils (Zeppel 2012). A survey among councils in Queensland, Australia, established that 50% (16 out of 32 responding councils) had joined CCP. It was found that CCP contributed to a minor degree to emission reductions by means of climate certification (Zeppel 2013b).

The literature analysis yielded only one investigation (published in two formats: a master thesis in 2011 and a peer-reviewed article in 2014) that specifically focussed on the impact of TMCNs in Germany. In this study, Hakelberg investigates the impact of TMCNs on the local level (Hakelberg 2011, 2014). He limits his investigation to members of the Cities for Climate Protection Programme, Climate Alliance, Energy Cities and C40. His main finding is that membership of a TMCN significantly increases the likelihood that European municipalities will develop a climate strategy of their own and issue local climate policies. However, he neglects the question of adaptation. While his quantitative data is rich, it focuses on Europe, rather than Germany, as the unit of analysis. In the second half of his study, he investigates two German cases qualitatively (Hannover and Offenbach). His findings from these two cases indicate that TMCNs influence cities in that they serve as a 'key resource of knowledge and expertise' for city administrations. He points out that this is true for both the newcomer- (Offenbach) as well as the pioneer-city (Hannover). Despite the many hundred

memberships no further studies were found that specifically investigate the impact of TMCNs on local climate governance in Germany.

5.5. Institutional links between TMCNs

Links between networks are widespread. Analysis of material provided by the networks suggests that two main blocks of TMCNs have emerged: in one block there is a stronger focus on mitigation, whereas in the other it is on adaptation (see Table 1). The former comprises networks connected to the Covenant of Mayors, which includes among its supporters several other networks, sub-networks and associations of local governments. Among the group of networks that were investigated in this article Mayors Adapt, Energy Cities and Climate Alliance deserves mention. The Covenant appears to serve as a mitigation hub, so a point of intersection for mitigation networks. All four networks – Climate Alliance, Energy Cities, the Covenant of Mayors and Mayors Adapt – share an address in Brussels and the Covenant of Mayors employs staff from the three other networks (Climate Alliance 2013; Covenant of Mayors 2013; Energy Cities 2013). This fact is less surprising when the historical development of the Covenant of Mayors is taken into consideration; while the institution was supported by the EU, Energy Cities and Climate Alliance played a major role in setting up the network. Today, both Energy Cities and Climate Alliance provide links to the homepage of the Covenant of Mayors on their home page.

A link between the networks focussing on mitigation and those focussing on both mitigation and adaptation is established through ICLEI – Local Governments for Sustainability which is, on the one hand on the list of Covenant supporters, while on the other hand ICLEI serves as a hub for adaptation networks. It is the mother organisation for the Cities for Climate Protection Programme which nowadays focuses on mitigation and adaptation alike. Furthermore it supports the UNISDR Resilient City Network which is also supported by the World Mayors Council on Climate Change. ICLEI is also connected to the C40 Cities Climate Leadership Group. ICLEI's important position as the hub between different networks can be explained by ICLEI's own profile. Among other things that it does, ICLEI promotes urban development that brings about 'sustainable, resilient (...) and low carbon' (ICLEI) cities. ICLEI addressed issues that are related to local responses to climate change while constituting a network that is concerned with a wider array of topics.

As shown, there are links between the different networks, such as cities that are members of several networks or joint initiatives (e.g. Covenant of Mayors). The functioning and impact of single networks can only be fully understood if links between networks are taken into consideration. Furthermore, the analysis found indicators of the existence of two meta-networks that might serve as focal points for the networks' efforts. It seems that these meta-networks were set up to coordinate networks' activities and increase efficiency; however, more research on this aspect of TMCNs is needed.

6. Conclusion

The literature on TMCNs argues that TMCNs are important actors in global climate governance. Scholars have further demonstrated that TMCNs can affect all levels of the European multilevel governance system, whilst comparatively little research has been conducted on the impact of TMCNs at local levels. TMCNs are widespread among German cities. However, nearly 25 years after the first TMCNs started their work in Germany much is still unknown about their actual impact on urban climate governance on the local level.

This article demonstrates the potential TMCNs have to exert considerable influence on urban climate governance in Germany. It presents an analysis of the proliferation and characteristics of TMCNs in Germany, provides a conceptual framework for locating TMCNs impacts at municipal

level and identifies knowledge gaps that need further investigation.

The results show that the TMCNs active in Germany have different profiles, which are shaped not only by their varying emphasis on mitigation and adaptation but also by the degree to which they assume different functions:

The *networks as platforms* function describes the scope that networks offer their members to communicate their climate policies. This function is first and foremost related to learning processes between municipalities. Most networks afford their members opportunities to present their policies to each other (see Table 2). This exchange of ideas can foster the proliferation of new and innovative practices of local climate governance. Learning from other cities might not only enable local administrations to see what is possible but also how ambitious goals can be achieved. Thus, the platform function widens the scope of available climate options for network members. The material compiled for this study indicates that cities making use of this function are not motivated solely by altruistic considerations. However, the boundary between sincere knowledge-sharing and place-branding activities is less clear-cut than one might wish.

All the networks investigated provide some kind of *consultancy* services to their members (see Table 2). The degree of activity differs and depends, among other things, on the infrastructure that the network in question commands. However, the provision of services by networks does not automatically lead to an implementation of measures in municipalities. Only networks that have some form of institutionalised infrastructure can provide more sophisticated forms of this function. Nonetheless, the existence of numerous tool, guides and other consultancy services greatly increase the scope of local climate policies.

As *commitment broker* networks help their members to live up to the voluntary commitments that they make when embarking on membership. Some networks do not provide this function at all. The Covenant of Mayors has proved to be the most active in this field. Carbon registries play a central role for this function. While the Covenant of Mayors manages an own reporting system other networks such as the World Mayors Council rely on the members willingness to join the Carbon*n* Climate Registry. The commitment broker function does not per se enable municipalities to implement more ambitious climate policies. It however can help facilitate decision making processes in local politics. By placing a municipality's efforts into the narrative of a broad climate movement, ambitious goals can more easily be argued for.

The function of networks as *city advocate* is assumed by the networks in different degrees. The Covenant of Mayors and Future Cities don't take it up at all. While Future Cities seems to lack the capacity to engage in lobbying activities in the first place, the Covenant of Mayors has no need to fulfil this role. As a network that emerged from the cooperation between Energy Cities and Climate Alliance it can simply rely on their efforts in this field. Other networks, such as Climate Alliance, actively assume this function, e.g. by their attendance at the COP 19 negotiations in Warsaw, 2013. While these efforts do not directly affect the member cities it aims at improving the political environment and legal frame in which local governments take their decision. Just as with the consultant function, the city advocate role requires networks to set up the necessary infrastructure to coordinate and implement their efforts.

Based on the differences in the networks' profiles it is to be expected that the potential impact the networks have on their members differs from network to network. This assumption is confirmed by the fact that the responsibility for the network membership in bigger cities with more than one membership is often dispersed over several departments within the same city administration. The wide proliferation as well as the wide range of potential benefits that are provided through the different functions are indications of the impact of the TMCNs on urban climate governance in Germany. However, more research – quantitative and qualitative – is needed to confirm the hypothesis of the networks' impact that has been derived

from this analysis. Future research should be directed at the following four research gaps identified in this article:

6.1. De facto impact

Very few case studies investigate the actual impact of TMCNs at the municipal level (e.g. Davies 2005; Hakelberg 2014). This is partly because most publications on this topic are in the field of political science. The strong influence of scholars from international relations has directed the focus towards the impact TMCNs have on higher levels of governance (e.g. national and EU level). Further in-depth investigations of how TMCNs' influence the local level could produce the relevant and interesting insights that are necessary for a more comprehensive understanding of the impact of TMCNs. Further research should address this research gap by conducting case studies of TMCN member cities and their climate policies in connection with their membership. Further quantitative data on German member cities would shed light on this issue. I suggest a survey with either all German municipalities or a share of them in case findings are supposed to be limited to a specific group within the population (e.g. cities above 100,000 inhabitants).

6.2. Mitigation and adaptation

All studies on TMCNs so far focus on the impact these networks have on the governance of climate change mitigation. However, recently many of the networks have adopted some kind of climate change adaptation component. Even if networks such as the Cities for Climate Protection Programme or Climate Alliance were initially networks focussing solely on mitigation, climate change adaptation has become an important part of their portfolio. In March 2014 Mayors Adapt was launched, to act as an adaptation counterpart of the Covenant of Mayors, bearing further testimony to this development. These current developments underline the timeliness of the issue. More knowledge on how TMCNs influence local climate change adaptation policies is needed. It would be interesting to see how the four network functions that were identified for this article manifest in the context of adaptation. Especially, the commitment broker function needs to be reworked for the adaptation activities of networks.

6.3. Conceptual framework

A satisfying comprehensive categorisation of TMCNs that can be used as a starting point to assess the networks' impact has yet to be made. Keiner and Kim (Keiner & Kim 2007) attempted to do so, but because it applies too broad a definition of transnational networks and includes too many characteristics their analysis lacks stringency. The categorisation by Andonova et al. (Andonova et al. 2009) served as a starting point for this study. However, their analysis includes all networks that were set up in response to climate change and not only municipal ones. Furthermore, their functional categories only partly reflect the municipal perspective. This present article therefore presented a categorisation based on the networks' activities that can be used as a basis for further investigating TMCN impact. However, further empirical work is needed to confirm the functions presented in this article.

6.4. Meta networks

A final finding is that cooperation between networks is widespread. Networks cooperate in single projects, share infrastructure and staff or set up new networks together as in the case of the Covenant of Mayors. Just like climate change adaptation, this aspect of TMCNs seems not to have made it onto the agenda of researchers in this field and should thus be further researched since the networks' impact can only be assessed if synergies between them are taken into account. I suggest two different approaches to this topic. First, future research should attempt to unveil how cooperation between networks takes place on the network level. Staff of cooperating TMCNs should be interviewed to learn more

about inter-network cooperation. Events such as shared conferences can be a further source of information. Second, when assessing the actual impact of networks on the municipal level through case studies special attention should be paid to how cities perceive different networks and network cooperation. It would be interesting to know if membership in one network increases the likelihood of a city to join a second one.

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Notes on contributor

Henner Busch is a doctoral candidate in Sustainability Science at Lund University Centre for Sustainability Studies (LUCSUS) and Lund University Centre of Excellence for Integration of Social and Natural Dimensions of Sustainability (LUCID) in Sweden. He mainly works on local responses to climate change and renewable energy.

ORCID

Henner Busch http://orcid.org/0000-0002-0468-2155

References

Adger WN, Dessai S, Goulden M, Hulme M, Lorenzoni I, Nelson DR, Naess LO, Wolf J, Wreford A. 2009. Are there social limits to adaptation to climate change? Clim Change. 93:335–354. doi:10.1007/s10584-008-9520-z

Anderberg S, Clark E. 2012. The green and sustainable Øresund region: eco-branding Copenhagen and Malmö. In: Vojnovic I, editor. Sustain a glob urban context. East Lansing: Michigan State University Press.

Andonova LB, Betsill MM, Bulkeley H. 2009. Transnational climate governance. Glob Environ Polit [Internet];9:52–73. Available from: http://www.mitpressjournals.org/doi/abs/10.1162/glep.2009.9.2.52

Betsill M, Bulkeley H. 2004. Transnational networks and global environmental governance: the cities for climate protection program. Int Stud Q [Internet]. [cited 2013 Sep 3];471–493. Available from: http://onlinelibrary.wiley.com/doi/10.1111/j.0020-8833.2004.00310.x/full

Betsill M, Bulkeley H. 2006. Cities and the multilevel governance of global climate change. Glob Gov [Internet]. [cited 2013 Oct 29]; 12:141–159, Available from: http://journals.rienner.com/doi/abs/10.5555/ggov.2006.12.2.141

Betsill MM. 2001. Mitigating climate change in US cities: opportunities and obstacles. Local Environ. 6:393–406. doi:10.1080/13549830120091699

Bouteligier S. 2013. Cities, networks, and global environmental governance: spaces of innovation, places of leadership. Abingdon: Routledge.

Bulkeley H. 2010. Cities and the governing of climate change. Annu Rev Environ Resour [Internet]. [cited 2014 Jan 21];35:229–253, Available from: http://www.annualreviews.org/doi/abs/10.1146/annurev-environ-072809-101747

Bulkeley H. 2013. Cities and climate change. London: Routledge.

Bulkeley H, Betsill M. 2005. Rethinking sustainable cities: multilevel governance and the "Urban" politics of climate change. Env Polit [Internet]. [cited 2013 Nov 7];14:42–63. Available from: http://www.tandfonline.com/doi/abs/10.1080/0964401042000310178

Bulkeley H, Castán Broto V, Hodson M, Marvin S. 2013. Introduction. In: Bulkeley H, Castán BV, Hodson M, Marvin S, editors. Cities low carbon transitions. Milton Park: Routledge, Revised pa; p. 1–10.

Bulkeley H, Davies A, Evans B, Gibbs D, Kern K, Theobald K. 2003. Environmental governance and transnational municipal networks in Europe. J Environ Policy Plan [Internet]. [cited 2013 Dec 20];5:235–254. Available from: http://www.tandfonline.com/doi/abs/10.1080/1523908032000154179

Climate Alliance. 2005. Adaptation and Mitigation – an Integrated Climate Policy Approach [Internet]. [cited 2013 Dec 20]. Available from: http://www.amica-climate.net/home1.html

Climate Alliance. 2012. Cliamte Scout [Internet]. [cited 2013 Dec 20]. Available from: http://www.klimascout.de/

Climate Alliance. 2013. Climate Alliance office in Brussels [Internet]. [cited 2013 Dec 20]. Available from: http://www.klimabuendnis.org/brussels-office0.html#c2716

Covenant of Mayors. 2013. Contact page of the Covenant of Mayors [Internet]. [cited 2013 Dec 20]. Available from: http://www.eumayors.eu/about/contact_en.html

Curtis S. 2010. Global cities and the transformation of the international system. Rev Int Stud [Internet]. [cited 2014 Aug 28];37:1923–1947. Available from: http://www.journals.cambridge.org/abstract_S0260210510001099

Davies A. 2005. Local action for climate change: transnational networks and the Irish experience. Local Environ [Internet]. [cited 2013 Sep 18];10:21–40, Available from: http://dx.doi.org/10.1080/1354983042000309298

Dinnie K, editor. 2010. City branding – theory and cases. Place unknown: Palgrave Macmillan.

Dodman D. 2009. Blaming cities for climate change? An analysis of urban greenhouse gas emissions inventories. Environ Urban [Internet]. [cited 2013 Sep 18];21:185–201. Available from: http://eau.sagepub.com/content/21/1/185.short

Energy Cities. 2013. Come and meet us – contact page of Energy Cities [Internet]. [cited 2013 Dec 20]. Available from: http://www.energy-cities.eu/Privacy

Fay C. 2007. Think locally, act globally: lessons to learn from the Cities for Climate Protection Campaign. Innov J Polit [Internet]. [cited 2013 Nov 5];7:1–12, Available from: http://www.calgaryurbancampus.ucalgary.ca/innovations/files/innovations/Fay-ThinkLocally.pdf

Forsee W, Ahmad S. 2011. Evaluating urban storm-water infrastructure design in response to projected climate change. J Hydrol Eng [Internet]. [cited 2013 Oct 30];865–873. Available from: http://ascelibrary.org/doi/abs/10.1061/(ASCE)HE.1943-5584.0000383

Hajer MA, Wagenaar H, Goodin RE, Barry B, Hardin R, Pateman C, Weingast B, Elkin S. 2003. Deliberative policy analysis: understanding governance in the network society. Cambridge: Cambridge University Press.

Hakelberg L. 2011. Governing climate change by diffusion [Internet]. 1st ed. Berlin: Freie Universität Berlin, Forschungszentrum für Umweltpolitik. Available from: http://edocs.fu-berlin.de/docs/servlets/MCRFileNodeServlet/FUDOCS_derivate_000000001736/Hakelberg_ffu_report_08-2011.pdf?hosts=

Hakelberg L. 2014. Governance by diffusion: transnational municipal networks and the spread of local climate strategies in Europe. Glob Environ Polit. 14:107–129.

ICLEI. Homepage [Internet]. [cited 2013a Dec 20]. Available from: http://www.iclei.org/

ICLEI. ICLEI – who we are [Internet]. [cited 2013b Dec 20]. Available from: http://www.iclei.org/iclei-global/who-is-iclei.html

IPCC. 2007. Climate change 2007: an assessment of the intergovernmental panel on climate change. In: Pachauri RK, Reisinger A, editors. Climate change, Vol. 446; [Internet]. Geneva: IPCC; p. 12–17. Available from: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf

Jerneck A, Olsson L, Ness B, Anderberg S, Baier M, Clark E, Hickler T, Hornborg A, Kronsell A, Lövbrand E, Persson J. 2010. Structuring sustainability science. Sustain Sci [Internet]. [cited 2011 Aug 22];6:69–82, Available from: http://www.springerlink.com/index/10.1007/s11625-010-0117-x

Kamal-Chaoui L, Roberts A 2009. Competitive cities and climate change – OECD Regional Development Working Paper [Internet]. Paris; [cited 2013 Sep 19]. Available from: http://www1.oecd.org/governance/regional-policy/44232251.pdf

Keiner M, Kim A. 2007. Transnational city networks for sustainability. Eur Plan Stud [Internet]. [cited 2013 Sep 4];15:1369–1395, Available from: http://www.tandfonline.com/doi/abs/10.1080/09654310701550843

Kern K, Bulkeley H. 2009. Cities, Europeanization and multi-level governance: governing climate change through transnational municipal networks. JCMS J Common Mark Stud [Internet]; 47:309–332. Available from: http://doi.wiley.com/10.1111/j.1468-5965.2009.00806.x

Khagram S, Nicholas KA, Bever DM, Warren J, Richards EH, Oleson K, Kitzes J, Katz R, Hwang R, Goldman R. et al. 2010. Thinking about knowing: conceptual foundations for interdisciplinary environmental research. Environ Conserv [Internet]. [cited 2011 Aug 28];37:388–397. Available from: http://www.journals.cambridge.org/abstract_S0376892910000809

Klijn E-H, Skelcher C. 2007. Democracy and governance networks: compatible or not? Public Adm [Internet];85:587–608. Available from: http://doi.wiley.com/10.1111/j.1467-9299.2007.00662.x

Kronsell A. 2013. Legitimacy for climate policies: politics and participation in the Green City of Freiburg. Local Environ [Internet];18:965–982. Available from: http://www.tandfonline.com/doi/abs/10.1080/13549839.2012.748732

Lindseth G. 2004. The Cities for Climate Protection Campaign (CCPC) and the framing of local climate

policy. Local Environ [Internet]. [cited 2013 Nov 5];9:325–336. Available from:,http://www.tandfonline.com/doi/abs/10.1080/1354983042000246252

Lowndes V. 2001. Rescuing Aunt Sally: taking institutional theory seriously in urban politics. Urban Stud [Internet]. [cited 2013 Nov 21];38:1953–1971. Available from: http://usj.sagepub.com/content/38/11/1953.short

Maria V, Rahman M, Collins P. 2013. Urban Heat Island Effect: thermal response from different types of exposed paved surfaces. Int J Pavement Res Technol [Internet]. [cited 2013 Sep 18];6:414–422. Available from: http://trid.trb.org/view.aspx?id=1259488

Moses J, Knutsen T. 2007. Ways of knowing: competing methodologies in social and political research. New York: Palgrave McMillan.

Pielke R, Prins G, Rayner S, Sarewitz D. 2007. Climate change 2007: lifting the taboo on adaptation. Nature [Internet]. [cited 2013 Nov 6];445:597–598. Available from: http://www.nature.com/nature/journal/v445/n7128/abs/445597a.html

Risse-Kappen T. 1995. Bringing transnational relations back in. New York: Cambridge University Press.

Rosenzweig C, Solecki W, Hammer SA, Mehrotra S. 2010. Cities lead the way in climate-change action. Nature. 467:909–911.

Satterthwaite D. 2008. Cities' contribution to global warming: notes on the allocation of greenhouse gas emissions. Environ Urban [Internet]. [cited 2013 Mar 19];20:539–549, Available from: http://eau.sagepub.com/cgi/doi/10.1177/0956247808096127

Toly NJ. 2008. Transnational municipal networks in climate politics: from global governance to global politics. Globalizations [Internet]. [cited 2013 Sep 2];5:341–356, Available from: http://www.tandfonline.com/doi/abs/10.1080/14747730802252479

Tompkins EL, Eakin H. 2012. Managing private and public adaptation to climate change. Glob Environ Chang [Internet]. [cited 2014 Jan 25];22:3–11, Available from: http://linkinghub.elsevier.com/retrieve/pii/S0959378011001452

UN-Habitat. 2011. Cities and climate change – Global Report on Human Settlements 2011. London: UN-Habitat.

UNISDR. 2012. Making cities resilient: my city is getting ready [Internet]. [cited 2013 Nov 7]. Available from: http://www.unisdr.org/campaign/resilientcities/

United Nations. 2013. Millennium development goals indicators – carbon dioxide emissions. New York (NY): United Nations.

United Nations Framework Convention on Climate Change. 2013. Report of the Conference of the Parties on its nineteenth session, held in Warsaw from 11 to 23 November 2013 [Internet]. [cited 2014 Jan 31]. Warsaw. Available from: http://unfccc.int/resource/docs/2013/cop19/eng/10a01.pdf

Wamsler C. 2014. Cities, disaster risk and adaptation. 1st ed. London: Routledge.

Wamsler C, Brink E, Rivera C. 2013. Planning for climate change in urban areas: from theory to practice. J Clean Prod [Internet]. [cited 2013 Dec 12];50:68–81. Available from: http://linkinghub.elsevier.com/retrieve/pii/S095965261200652X

Wilbanks TJ, Kane SM, Leiby PN, Perlack RD, Settle C, Shogren JF, Smith JB. 2003. Possible responses to global climate change: integrating mitigation and adaptation. Environ Sci Policy Sustain Dev [Internet]. [cited 2014 Jan 31];45:28–38. Available from: http://www.tandfonline.com/doi/abs/10.1080/00139150309604547

Zeppel H. 2012. Governing carbon mitigation and climate change within local councils: a case study of Adelaide, South Australia. Commonw J Local Gov [Internet]. [cited 2014 Oct 2];70–85. Available from: http://epress.lib.uts.edu.au/journals/index.php/cjlg/article/view/2690

Zeppel H. 2013a. The ICLEI cities for climate protection program: local government networks for urban climate governance. In: Cadman T, editor. Climate change and global policy regimes: towards institutional legitimacy [Internet]. Place unknown: Palgrave Macmillan; [cited 2014 Sep 18];p. 217–231. Available from: http://www.palgraveconnect.com/doifinder/10.1057/9781137006127

Zeppel H. 2013b. Carbon management by Queensland local councils. J Corp Citizsh. 2013:117–136.

Article II

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Green Attraction—Transnational Municipal Climate Networks and Green City Branding

Henner Busch[1] & Stefan Anderberg[2]

[1] Lund University Centre for Sustainability Studies (LUCSUS) & Lund University Centre of Excellence for Integration of Social and Natural Dimensions of Sustainability, Lund University, Sweden

[2] Department of Management and Engineering (IEI) / Environmental Technology and Management (MILJÖ), Linköping University, Sweden

Correspondence: Henner Busch, Lund University Centre for Sustainability Studies, P. O. Box 170, SE-22100 Lund, Sweden. E-mail: henner.busch@lucsus.lu.se

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Abstract

In this article, we investigate the nexus of green city branding and municipal climate networks. In recent decades, a number of formal transnational municipal climate networks have emerged and their membership continues to increase. In parallel, city branding that is based on green policies, has gained importance. Based on quantitative and qualitative data, we assess how and to what extent German cities use their membership in transnational municipal climate networks to communicate green city brands. In contrast to our expectations, we encountered very few indications of green city branding efforts by German cities. Our analysis shows that in general, branding considerations only play a negligible role in the involvement of cities in transnational municipal climate networks or climate policies. Instead, it seems that German cities use their membership in climate networks, to genuinely improve local climate change strategies. We therefore suggest that research on green city branding should be more sensitive to the particular context of cities and efforts should be made to unveil the underlying motives for the communication of green policies.

Keywords: transnational municipal climate networks, green city branding, urban climate governance, climate change mitigation, climate change adaptation

1. Introduction

In recent decades, climate change has become an urgent matter for all levels of government (Pachauri et al., 2014), and increasingly cities and regions engage in climate mitigation and adaptation. Cities are of great importance for climate change (Bulkeley, 2013) because for a long time they have dominated global energy use and material flows as well as emissions (Anderberg, 2012). And so it follows that cities are estimated to be responsible for 70% of the global greenhouse gas emissions (UN-Habitat, 2011). Climate change is also increasingly perceived as a threat to cities as many large cities are located in coastal areas, and so they are at risk of rising sea levels and storm surges. Furthermore, cities are more vulnerable to heat waves compared to rural areas (Maria, Rahman, & Collins, 2013). At the same time, cities are perceived to offer leverage points for tackling climate change due to scale economies in relation to heating and public transport systems (Kamal-Chaoui & Roberts, 2009).

Even if it is not obvious that taking action on global issues such as climate change is a local responsibility, and the impact of individual cities' actions remains negligible in relation to global emissions, the efforts of municipalities all over the world bear testimony to the growing importance of cities in the context of climate change policy. There has been a rapid diffusion of local climate initiatives with both climate adaptation and

mitigation plans including climate projects focusing on energy efficiency, alternative energy or transport (Hakelberg, 2011). In response to climate change, the last few decades have seen several transnational municipal networks (TMCNs) emerging to support such local efforts. The two most important, Climate Alliance and the Covenant of Mayors, unite several thousand European municipalities in their efforts against climate change. These networks connect and advise municipalities, and lobby for climate change policies on higher administrative levels, such as national governments or EU administration (Emelianoff, 2013). TMCN memberships are particularly widespread in Europe. Three of the four largest TMCNs (with regards to No. of members): Energy Cities (1,510 members), Climate Alliance (1,699) and the Covenant of Mayors (6,482), have almost exclusively European members.

Germany is an urbanized country with 75% of the population living in towns and cities (CIA, 2015). It is the EU country with the largest economy, population, and highest greenhouse gas emissions (United Nations, 2013). In Germany, the climate issue has been on the agenda since the 1990s, and in the recent decade, Germany has initiated the ambitious project of transforming its energy system to a renewable energy-based one (Strunz, 2014). German cities have actively contributed to climate mitigation by: "greening" their local energy suppliers (Stadtwerke), reducing consumption through improved insulation or through strict regulations in the local building codes (Kronsell, 2013). Many German cities have complemented their climate policies with memberships in TMCNs. TMCNs have seen a particularly wide proliferation amongst bigger German cities (>100 000 inhabitants). Nearly 90% (68 of 76) of them have joined at least one of the climate networks (Busch, 2015). In Germany, 136 cities with more than 50 000 inhabitants have joined at least one TMCN. This high number of member cities provides a solid base for a systematic investigation of TMCNs' impact on local policies.

Green city branding, based on innovative local sustainability initiatives and ambitions, has increasingly been viewed as a potential basis for city branding. City branding, or city marketing, focuses mostly on "the city as a place for profitable business" and "the city as a good place to live in". (Gustavsson & Elander, 2012) Sustainability or green city branding has the potential to combine these two facets of city branding. Recognized "eco-city forerunners" such as Curitiba, Portland, Freiburg and Malmö are often viewed as successful examples of green city branding, and attract thousands of "policy tourists" every year (Andersson, 2015) who come to see their innovative sustainability projects. Despite this development, empirical investigations of green city branding are scarce (Andersson, 2015).

In the most recent years, it seems to have become increasingly popular to use climate change mitigation or adaptation activities as a basis for green city branding (Gustavsson & Elander, 2012; Jonas, Gibbs, & While, 2011; Joss, Cowley, & Tomozeiu, 2013). This trend is visible with various eco-cities, where climate change related projects and plans have become increasingly important, but the most obvious examples of "climate branding" are found in cities that have declared goals to become carbon-neutral within the next few decades. The planned new city of Masdar in Abu Dhabi, United Arab Emirates, markets itself as *the world's first carbon-neutral, zero-waste, purpose-built clean technology cluster* (Abu Dhabi System & Information Centre, n.d.; Cugurullo, 2013), while Växjö in Sweden is the first city that declared the goal of becoming fossil free and has branded itself as "*the greenest city in Europe*" (City of Växjö, 2007). Copenhagen has long been one of the most ambitious big cities in terms of green branding (Anderberg & Clark, 2013), and in recent years it has become one of the trendsetters for climate city branding. During the preparations of the climate meeting COP 15 in 2009, the city not only launched the vision that Copenhagen would be the world's most environmentally sound metropolis by 2015 but it also declared the goal of becoming carbon neutral by 2025. This goal was followed by CPH 2025 Climate Plan in 2012, which presented a road map towards carbon neutrality, and has provided the basis for the city's climate branding. Copenhagen is a steering group member in C40, which has provided the most important international scene for exposing Copenhagen's climate ambitions and giving legitimacy to Copenhagen's claims of being the frontrunner among capital cities. Gustavsson et al. (p. 63) found that TMCNs offer the 'possibility to put the city's name on the global map, in order to stand out as a pioneer city welcoming innovative ideas, combining local economic development with reduction of GHG emissions' and thus serve as a vehicle for green city branding intentions (Gustavsson, Elander, & Lundmark, 2009).

The aim of this article is to contribute to the understanding of how climate branding, as a form of green city branding, relates to TCMNs and how cities engage in green city branding in the context of their membership in TMCNs. The overriding question addressed is *if and how cities use their memberships for green city branding*. We deliberately chose "use" as a rather neutral term to not exclude ways or channels of green city branding. The ways in which green city branding manifests, in the context of TMCNs, is further addressed in section 2.5. The research question is addressed through an investigation of the TMCNs and German cities, which are members of

these networks. Our analysis is based upon results from: a survey, interviews, website analyses and observations during network conferences and focuses on the following questions:

1) What opportunities for green city branding do TMCNs, active in Germany, offer their members?

2) How do cities actually use their membership in TMCNs for green city branding?

3) What explains the observed green city branding efforts?

The article starts with a background on city branding in general and different forms of particular green city branding, which serves as a basis for the analysis, and a review of research on TMCNs and on the nexus of green city branding and TMCNs. Then follows a presentation of the methodology of the study, where we explain our analytical framework. In the next part, we present our analysis of green city branding in relation to TMCNs and their member cities in Germany, which is followed by a discussion of the results of the analysis. Finally, we present the conclusions of the study, and some implications for future research on green place branding in the context of TMCNs.

This paper exclusively investigates the potential links between network membership and green place branding, but it is worth noting that TMCNs serve many purposes. Busch (2015) presents a conceptual overview of the functions that TMCNs provide their members, which is summarised in section 2.5. Further assessments of TMCNs' impacts on local climate governance have been conducted by e.g., Davies (2005) and Hakelberg (2014).

2. Background

2.1 Place and City Branding

A positive city image attracts people, investors and enterprises. This assumption is the basis for city branding, which has become an important activity for cities around the world (Lucarelli & Berg, 2011). "Branding" is originally a business and marketing concept. Branding aims at adding value to a specific product, service or organization by differentiating them from competitors. "Place branding" (or city branding), sometimes referred to as "place marketing", "urban marketing", "city promotion", and "destination selling", has similar aims. It has the intention to increase the attractiveness of cities, regions and nations. Place branding has the longest history in terms of tourist marketing (Hanna & Rowley, 2008), but it is no longer restricted to traditional tourist destinations. Rather, "place branding" has become an important element in the development strategies for all kinds of cities and regions.

Cities and regions use different forms of branding in order to increase their attractiveness for tourists, and new inhabitants, companies and investments, as well as to create or strengthen the local identity (McCann, 2013). These intensified place branding efforts are most often explained with reference to the increasing competition between cities and regions (Andersson, 2014; Ashworth, Kavaratzis, & Wannaby, 2015). In the emerging "knowledge economy", cities increasingly compete with one another and try to attract a talented, innovative, and creative work-force (the creative class) as well as companies that employ them for well-paid jobs (Florida, 2002). A city brand is perceived as a useful tool for "entrepreneurial" city governments (Harvey, 1989) in the global arena. Ashworth et al. (2015, p. 4) suggest that place brands may also provide strategic guidance for place development, serve as a basis for cooperation between stakeholders, and as a solution to particular local problems or they might enrich the place experience for tourists and visitors. By offering a vision for a desirable future development of the city, the brand can stimulate coordinated actions and mobilise resources for steps in this direction. The branding may be launched as a solution to particular problems such as insufficient financial means for revitalization of run-down areas.

The development of city and place branding has attracted growing attention from research during the last decade. A diversified body of literature on place branding has emerged, with contributions from many different disciplines (urban studies, business and management, geography, sociology and planning) as well as consultants and practitioners. Several literature reviews on place branding and place marketing have been performed in recent years (Andersson, 2014; Berglund & Olsson, 2010; Hanna & Rowley, 2008; Kavaratzis, 2005; Lucarelli & Berg, 2011; Lucarelli & Brorström, 2013; McCann, 2009). Lucarelli and Berg (2011) identify three dominating *perspectives adopted in city branding research:*

1) "Branding as production" focuses on how to create and manage a brand as well as a branding process;

2) "Branding as appropriation" focuses on the reception, use and consumption of the brand, and the interpretation and utilisation of the branding process;

3) "Critical studies of city brands and branding processes" with a focus on their relations to the economic, social

and cultural context.

The third type of studies includes place branding as part of the emerging urban entrepreneurialism and place branding as an undemocratic or socially excluding process (Andersson, 2014).

The studies under these varying perspectives differ both in terms of research interests and theoretical foundations, and ontological starting-points. The overviews show both the diversity of place branding research and point towards different challenges, including lacking conceptual consistency and empirically based theoretical frameworks and models.

2.2 How City Branding Manifests

In designing a city brand, some features of a city are emphasized, whilst others are dismissed. The brand may be based on an emerging or desirable characteristic, or a vision or goal, rather than current reality, but in order to be credible and successful in the long run it needs to be backed up by consistent actions (Anderberg & Clark, 2013; Dinnie, 2010). City branding can aim at the "outside", i.e. a wider audience outside the municipality, but it can also be aimed at the citizens within the municipality, as an attempt to create a local identity. In the following, we focus on the first form of city branding, namely, branding directed at recipients outside of the municipality. The literature describes how outward-oriented place branding often focuses on creating a double image of the city as liveable and knowledgeable.

Even if cities attempt to emphasise "unique" traits of the city, it is interesting to note that cities seem to follow certain trends when choosing branding areas and images. "Best practice" recommendations increase this tendency and result in cities adopting similar branding strategies and develop similar images (Syssner, 2012). Furthermore, the claimed positive branding effects are often questionable and cannot be supported by empirical studies (McCann, 2009; Niedomysl & Jonasson, 2012). A further problem is that much of the literature remains on a theoretical or at best descriptive level when approaching the topic. Analytical studies based on rich empirical data are scarce (Andersson, 2015). As a result, many conclusions about branding are based on assumptions. This becomes particularly obvious when looking at the assumed intentions behind city branding. We will engage more with the question of branding intentions in section 6.2.

2.3 The Many Faces of Green City Branding: Eco-Cities, Green Place Marketing and Sustainability Branding

Marin-Aguilar and Vila-López (2014) suggest that two strategies for improving the city brand are gaining importance: firstly *experiential marketing,* by arranging "unforgettable experiences" such as mega events and secondly *green marketing,* by focussing on ecologically orientated policies.

Sustainable urban development or greening of the city has increasingly been presented as an opportunity for cities (Puppim de Oliveira et al., 2013). In different parts of the world, cities have in recent decades introduced sustainability initiatives. In connection with recognized sustainable city forerunners such as: Curitiba, Freiburg, Copenhagen, Portland, and Melbourne, it is often claimed that their efforts have had significant economic spin-offs, in terms of stimulating an emerging green economy and an increasing flow of green tourism with visitors coming to view, learn and be inspired by the local initiatives (Bouteligier, 2013).

There are several ways in which cities can use green or sustainability issues for place branding purposes. The first is to focus on liveability and the second is to focus on green-tech and policy. A third option, which is more recent and definitely more challenging to conceptualise, is the framing of the city as having a low impact on the environment. These different approaches are not mutually exclusive but instead they are often complementary, and occur at different aspects of a city's efforts to communicate its sustainability strategy.

Liveable cities:

The positive link between green areas and human well-being in urban areas has been scientifically established (Chiesura, 2004; Tzoulas et al., 2007). Many cities have understood that "greenness" can be used as a branding tool, and marketed the city as "liveable" and thus attractive for inhabitants, companies and visitors (Insch, 2011). In general, this approach has not focused on the actual environmental impact of the city but solely the well-being of its inhabitants and visitors. Questions of emissions or impacts of domestic consumption seem secondary if not negligible. Environmental measures that are mentioned include the expansion of green areas, roof gardens and vertical gardens and the restoration of ecosystems within or close to the city limits (Dinnie, 2010). Technologies and policies that actually address global environmental impacts are mostly chosen for their impact on the local environment, e.g., lower emissions of pollutants or noise and health benefits that follow switching from car to bike. Alleviating climate change, it seems, is only mentioned as a bonus or something that became apparent in the ex post evaluation of projects (Busch & McCormick, 2014).

Knowledgeable cities:

In Europe, the economic potentials of green technologies have been actively pursued since the 1990s via policies linking environmental policy to national and regional development strategies. Environmental investments, alternative energy and other projects have been introduced to stimulate economic growth and competitiveness by the development of a strong, green technology sector (Anderberg & Clark, 2013). Local authorities often widely advertise outstanding projects. Examples of this kind of branding can be found all over Europe, especially in places that have implemented ambitious green economy projects, e.g., renewable energy projects. Güssing (Austria), Samsö (Denmark) and Feldheim (Germany) have all invested in infrastructure to accommodate guests who want to learn about renewable energy, while Prenzlau (Germany) claims the title "city of renewable energies" (Busch & McCormick, 2014). Another example is the city of Växjö in Sweden, which tries to increase its attractiveness through promoting its eco-businesses (Emelianoff, 2013). This attractiveness is used to lure policy tourists into visiting the city but also to put Växjö on the map of bodies that decide on the funding of future climate projects (Gustavsson et al., 2009).

Low-impact cities:

A third way that cities can use green or sustainability issues for place branding purposes can be seen in the efforts of some cities to reduce their environmental impacts. Cities have always been places of intense material (Anderberg, 2012) and carbon flows (Bulkeley, Castán Broto, Hodson, & Marvin, 2013). This has made cities sources of waste, not least in the form of greenhouse gas emissions. With the acceleration of climate change, the need for urban low-carbon transitions has become more and more urgent. Spear-heading this development (e.g., by hosting and developing urban labs) can attract international attention and can help by developing local know-how (While, 2013) which in turn increases the city's image as "knowledgeable". However, the low-impact criterion brings about specific advantages, independent from the other two other categories. If a city is a leading pioneer in the field of low carbon transitions, companies might be attracted to the city because of the high local standards that provide a clearer planning frame. The impact of potentially disruptive, national legislation might thus be attenuated. Certain companies might also try to free-ride on the low-impact reputation that a city has built. For citizens, a city that enables a low-impact lifestyle (irrespective of liveability) might be an important criterion. Cities might adopt a low-impact image to strengthen the local identity. Finally, cities might be interested to present their success to funding bodies like the EU to attract funding for further projects (Gustavsson et al., 2009). This approach is linked to city branding, directed at communicating inwards (see section 2.2) (Middleton, 2011).

2.4 The Green Entrepreneurial City

Much of the literature on place branding sees the dominating reasons for city branding-activities as a result of the need for cities to compete globally (Bouteligier, 2013; Brand, 2007; Gulsrud, Gooding, Konijnendijk van den Bosch, & Bosch, 2013). Insch describes it as "a sense of urgency" that "grips" city authorities and makes them create a brand for their city (Insch, 2011, p. 8). The phenomenon of city branding demonstrates how the role of city authorities nowadays involves the active creation of a place that attracts resources. Thus, these activities have to be seen as a manifestation of the entrepreneurial thinking that nowadays dominates urban policies and which are the result of a neoliberal agenda (Brand, 2007).

In his very influential article 'From managerialism to entrepreneurialism: The transformation in urban governance in late capitalism' David Harvey describes the conditions under which the role of city administrations have changed. When, in the past, city authorities were mostly occupied with managerial tasks, e.g., the provision of infrastructure, they nowadays engage much more in activities to 'try and attract external sources of funding, new direct investments, or new employment sources' (1989, p. 7). The main driver for this development was the increasing competition that arose between cities in times of drastic transformation of the industrial sector in developed countries in the 1970s and 80s. This trend was made possible by the increasingly free flow of mobile capital. This entrepreneurialism is marked by public/private partnerships and a strong focus on projects that emphasis the improvement of living or working conditions within a certain jurisdiction (Harvey, 1989). It is not only branding activities that are suspected to be part of the neoliberal agenda that forms the basis for urban entrepreneurialism, but also sustainability policies per se. Holgersen and Malm find that in the case of Malmö (Sweden), sustainability policies have been used as a "green fix" to address the city's economic decline. The goal of this green fix is not the reduction of the city's environmental impact for altruistic reasons, but the mobilisation of resources for the revitalisation of the local economy (Holgersen & Malm, 2015).

Such a neoliberal, entrepreneurial mind-set would have an impact on green policies and the communication of these policies. This means that green urban policies are aimed at increasing the attractiveness of the city and not

at reducing the environmental impact. As a consequence, the main priority for decisions in this policy field is how well a measure can be marketed, rather than the actual environmental benefits. Another consequence is that the communication of these policies is directed at companies, tourists and potential new inhabitants. Bouteligier raises the question if the "retrofitting of a municipal building, the creation of a zero-emissions neighbourhood, or the redevelopment of the waterfront in the historic centre" are the "projects that will transform the world's current urban areas in more sustainable living environments" (Bouteligier, 2013, p. 94). However, these measures help the cities to portrait themselves as innovative "sustainability hubs" (ibid). One of the most astonishing examples of this is doubtlessly the "Eco-City" Masdar in the United Arab Emirates. The planners of Masdar aim at constructing a waste and carbon free city with a sophisticated public transport system (Sanford, 2010). Ironically, the public transport system conveniently connects the city to the close-by Abu-Dhabi International Airport through a regular train service.

Checker goes one step further by arguing that sustainability efforts that focus on branding a city might not only produce suboptimal results but that they can be outright harmful for sustainability in a broader sense. She argues that projects labelled as sustainable can foster "environmental gentrification" which is high-end development that appears to be environmentally sound but in essence only serves profit-maximising interests. Such a development of course compromises social justice and leads to the displacement of poor inhabitants to less well-off neighbourhoods (Checker, 2011).

However, it must be questioned if this negative view on urban sustainability initiatives is justified and if the motives behind sustainability policies of cities are indeed only an expression of a neoliberal agenda.

2.5 Transnational Municipal Climate Networks

The emergence of transnational governance has been thoroughly addressed by academic scholars, especially from Political Science, and more specifically those focusing on international relations. Transnational governance describes a process in which actors other than nation states take action in an international arena (Andonova, Betsill, & Bulkeley, 2009). While there is a multitude of transnational actors (e.g., corporations, regional governments, NGOs) and forms of networks (regional municipal networks like the Union of Baltic Cities or transnational lobby organisations), this article exclusively focuses on formal transnational municipal networks with an explicit focus on climate change issues.

Definitions of TMCNs have been provided by Keiner and Kim (2007), Kern and Bulkeley (2009) and Busch (2015). According to Kern and Bulkeley TMCNs have to fulfil three criteria: a) membership in these networks is voluntary, b) networks are characterised by a polycentric set-up and consequently are self-governed and c) they fulfil more functions than only lobbying but they help their members to implement policies. Busch (2015) adds two criteria. First, TMCNs need to have more than two members, meaning that a partnership between two cities does not constitute a network. Secondly, TMCNs need to have a certain degree of formalisation and institutionalisation. This means that upon joining a network, cities gain access to certain rights (and in most cases obligations) and that the networks themselves gain agency through a formal status and infrastructure (staff, offices and headquarters).

Busch (2015) presents a conceptualisation of functions that TMCNs offer their members. These are: consultancy, advocacy, commitment brokering and networks as platforms. Consultancy refers to tools and advice for local governments, provided by the networks' own formal infrastructure. An example of the kind of consultancy that a TMCN might provide is greenhouse gas emission accounting software or packages, for implementing climate activities with the local population. The advocacy function refers to the work of representatives from the networks in raising the issue of local climate governance to higher administrative levels such as nation states or the EU. The third function of commitment brokering occurs when networks compile, manage and publish emission inventories of their members. The idea behind this is that municipalities are more likely to live up to their voluntary emission reduction commitments if their progress (or underperformance) is communicated publically and when one city's progress is embedded in a narrative of a wider climate movement. The last function of networks as platforms, describes the space and channels that networks grant their members, to present their own profile, best practice and success stories. This can be membership profiles on webpages, conference presentations, brochures or newsletters. The last two functions (commitment brokering and networks as platforms) offer member municipalities the possibility to present their efforts to a wider audience of other cities and interested experts. (Busch, 2015)

2.6 Green City Branding and TMCNs

The scientific community has, up to now, only indirectly taken interest in the link between branding and TMCNs, but it has identified several activities and functions of TMCNs that may contribute to the green branding of cities.

Zeppel identifies certification (e.g., through ICLEI's Cities for Climate Protection Programme) and attracting low carbon industry investments, as two drivers for municipal climate policies (Zeppel, 2013), and another link is found in inter-municipal learning. Pioneering cities may acquire a "teacher" status that builds on the city's expertise in the context of TMCNs. "High levels of policy performance" attracts "information seekers" (Lee & van de Meene, 2012). So high-performers can expect more delegations from other cities and eco-tourists.

Bouteligier finds that the C40 network has actively used its potential to provide a public platform to attract new members (2013). Cities that are interested in presenting themselves as leaders can use this platform for green city branding purposes within and outside of the network (Bouteligier, 2013). Hakelberg investigates the case of Hannover (Germany). He finds that the city used its membership in CCP to present its progressive climate policies. Thus the city was able to "get rid of its mediocre image" and present itself as innovative climate pioneer (p. 61f). This was necessary to live up to high expectation that arose through the city's status as the host for EXPO 2000. However, these efforts were also perceived by the city as an attempt to attract high-tech business and highly qualified personnel (Hakelberg, 2011).

3. Hypotheses

Green city branding has become more common. City branding is often directed towards "the outside", and cities are increasingly active in city networks, which form an important part of the external relations of cities. Therefore, it can be expected that the participation of cities in transnational climate networks is related to the development and communication of city brands. Based on this, we formulated the two hypotheses that guided our research:

"German cities widely use channels provided by TMCNS to communicate their green city brands."

"German cities widely use their membership in TMCNs as a component of their green city brands."

These hypotheses do not imply that other functions of networks as described in section 2.5 do not occur or are not used by cities. However, this paper explicitly focuses the aspect of place branding and TMCNs.

4. Methodology

In order to answer the research questions and approach the hypotheses, we developed a research design that would help us to identify green city branding efforts amongst German cities and their work with TMCNs. Empirical material was gathered in the form of material disseminated by TMCNs and member cities (webpages, presentations at network conferences and brochures). These data were complemented with an online questionnaire that was sent to all German cities that hold membership and have more than 50 000 inhabitants (n=135, responses 61 [response rate 45%]). The questionnaire entailed questions on TMCN membership and the content and communication of local climate policies. In addition we conducted field-visits in four German cities (Bielefeld, Bonn, Hannover and Frankfurt am Main) and held six semi-structured interviews with personnel responsible for work that the cities' administrations had with the networks we identified for this research. These four cities were chosen because many respondents to the survey had named them as particularly visible and good practice examples. We also gathered further information from former and current staff of TMCNs.

We analysed the material in a step-wise approach, by slowly shifting the focus from the networks and their activities towards the cities and their respective activities. Thus, we attempted to cover many different ways in which green city branding, in the context of TMCNs, may occur.

5. Analysis

5.1 TMCNs in Germany

TMCN memberships are widespread in Germany, with 488 local governments holding membership in at least one network. These local governments are home of more than half of the German population. The quantitative analysis shows that big cities are not only more likely to join a TMCN, but they also are more likely to be a member in several networks simultaneously, compared to small cities or rural municipalities. (Busch, 2015)

We started our investigation by identifying the transnational networks with an explicit focus on climate issues that are active in Germany (see Table 1). Networks such as ICLEI, with a wider focus on sustainability issues, were not included. Through an analysis of the networks' profiles, based on an investigation of their webpages, service, activities and materials, we categorised the networks according to their green city branding potential. The criteria for this categorisation were:

- Exclusivity (open only to certain cities),

- Internal differentiation (grouping of cities according to performance),

- Space to display member profiles on network homepages,
- Provisioning of other network functions,
- Confidentiality (whether networks had exclusive sections on their homepage which can only accessed by members).

Two networks stand out: the C40 network and the UNISDR "Making Cities Resilient: 'My City is Getting Ready!' Campaign" (in the following "Resilient Cities"). Both these networks practice an internal differentiation of their members by awarding special status to good performers. Other network activities such as "providing a consultancy service" are rather underdeveloped in comparison to other TMCNs (Busch, 2015). When it comes to confidentiality, both networks do not have a separate "members-only section", meaning that all information is available to the public. This might indicate that the internal communication between members is not prioritised. Furthermore, both networks offer space on their webpages, which members can use to present their climate policies. While members of C40 seem relatively unrestricted in what they are allowed to present, Resilient Cities uses a template to bring member profiles into the same format. On top of that, C40 claims to be an exclusive network of pioneering cities, which display leadership in questions of climate change. See Table 1 for more details and information on other networks.

These two networks are not widely proliferated in Germany. C40 has two German members (Berlin and Heidelberg) and the Resilient Cities network has one (Bonn). The network with the widest proliferation in Germany (Climate Alliance, 466 members) does not have a very strong focus on city branding activities, but it still offers its members space to present their climate policies.

Eight out of the nine TMCNs refer to branding-related activities when describing the advantages that cities gain upon joining. Despite its high branding potential, C40 does not mention branding-related advantages. Mayors Adapt and the WMCCC list branding or branding related aspects as their first advantage. In the case of WMCCC, this probably has less to do with green city branding but more with appealing to the vanity of mayors to attain "global recognition as a sustainability leader". WMCCC is a network of local mayors and not of cities.

Table 1. TMCNs in Germany

Network	Exclusiveness	Internal differentiation	Other network functions	Confidentiality	Space to present climate policies
C40	Yes	Climate Leadership Awards; Steering Committee, Innovator, Mega or Observer City	Medium	No	High
Cities for Climate Protection Program (CCP)	No	City of Ambition	High	Yes	Low
Climate Alliance	No	Climate Star	High	Yes	High
Covenant of Mayors	No	No	High	Yes	Medium
Energy Cities	No	No	Medium	Yes	High
World Mayors Council on Climate Change (WMCCC)	No	No	Medium	Yes	Low
The Making Cities Resilient: 'My City is Getting Ready!' Campaign	No	Role Model Cities	Medium	No	Medium
Mayors Adapt	No	No	Medium	Yes	Medium

Notes. Exclusiveness: A network is considered "exclusive" if acquiring membership is only possible when municipalities fulfil certain requirements (e.g. demonstrate their leadership in the context of climate policies).

Internal differentiation: Some networks differentiate internally between their members by assigning certain categories to high-performers.

Display of members' profiles: Some networks offer their members the possibility to present their policies and projects. Some provide space for the members to present themselves as they see fit while others only provide a predefined profile page.

Other network functions: This characteristic refers to how networks perform in other network functions as identified by Busch (2015).

Exclusive web content: The fact that some of the web content is not available to everybody might be a hint that the network focuses on more than just spreading the branding message for their members.

Space to present climate policies: low: public membership list; medium: + predefined templates to present city are available; high: + individual member pages with detailed description

5.2 Branding through TMCNs

According to our survey results, the majority of German cities actively presented their climate work in the context of TMCNs (>58%). The most important channels were network conferences (38%) and city websites (32%) followed by printed leaflets (11%). 74.5% replied that they had learned about the climate work of other municipalities through the networks. The four most important media outlets for learning about other municipalities were: conferences (62%), websites (31%), newsletters (18%) and leaflets (9%) (multiple answers were possible). Cities that were named as particularly visible in the networks were: Frankfurt, Bonn, Munich, Freiburg, Bielefeld, Hannover and Münster. 58% of all respondents reported that they knew about visitors who had come to their city because of the local climate work. The most common group of visitors was staff from other municipalities (45%), politicians from the region (42%), foreign delegations (42%), interested citizens (24%) and scientists (12%). Only one city reported that they had been visited by a company (which is half as often as regional church groups who visited two cities).

To investigate how green city brands play out in practice, we analysed all 44 available websites from different networks that offer their members the opportunity to present themselves through a member profile. A criterion for websites to be included in this analysis was that they had to offer sufficient space and freedom for cities to present a clear brand. Simple factsheets with, for example emission inventories, were not taken into consideration. The distribution was as follows: Climate Alliance 41; C40 2; Resilient Cities 1.

Of the 44 city profiles, 17 presented some kind of coherent description that resembled a brand with distinct brand attributes (Dinnie, 2010). However, when comparing with the cities' official websites, only 8 of these were confirmed through consistent information. We then analysed the presented city profiles in relation to the three components of green city branding. 40 cities presented themselves as low-carbon, 23 as knowledgeable and 13 as liveable. Surprisingly, we encountered 8 municipalities, which presented alternative green brands on their own websites, which were not reflected in the cities' membership profile. For example, the city of Augsburg uses the slogan "Umweltstadt Augsburg—Kompetenz und Engagement" ("environmental city Augsburg—competence and engagement"). Despite this clear reference to being "knowledgeable" the membership profile at Climate Alliance only presented the city as "low-carbon".

41 of the 44 city profiles were located at the Climate Alliance webpage. The remaining 3 were at C40 (Berlin, Heidelberg) and Resilient Cities (Bonn). C40 and Resilient Cities scored fairly high in our evaluation of their green city branding potential. Berlin and Heidelberg both use their membership pages on the C40 website to present case studies from their cities. A clear overarching brand is not visible in the case of Berlin, which only presents case studies that underline the innovative character of the projects. Heidelberg does not employ a clear name for their brand, but presents the city in a coherent manner, as a forerunner in climate issues. This image is confirmed through documented emission cuts. What is remarkable is that both pages have not been updated since November 2011.

Resilient Cities, together with C40, displayed a high potential for place branding. Bonn is the only German member of this network. In the short text of Bonn's member profile, the city is portrayed as a place that has attracted many UN organisations and NGOs, which are active in the field of sustainability. This is consistent with the information that we gathered during our interviews with staff members of the city. However, the brand of Bonn as a hub for NGOs is not directly related to questions of local climate policies. Bonn also holds the status of a "Model City" within the network. Cities are recognised by UNISDR as model cities after they have been nominated. According to the C40 webpage, these cities 'must show innovation, sustained results in reducing disaster risk and must be interested to showcase results.' Amongst other things, Model Cities have to 'prepare audio-visual material presenting innovative solutions for urban risk and local risk reduction, and organizing policy dialogues'. However, just like Berlin and Heidelberg in C40, the information about Bonn on the campaign's webpage has not been updated since 2011.

The webpages of C40, Resilient Cities and Climate Alliance do not present any information on the management of the member profiles. C40 and Resilient Cities did not reply to our inquiry on this issue. However, a former staff member informed us that updating the network's webpage is not a main priority. Some texts on the webpage have not been updated for many years. Climate Alliance informed us that the members do not update their profiles independently. Updates of some member profiles are done on a monthly basis. Members can of course send updates and new projects to Climate Alliance, but this happens rarely. Mostly, it is the network's staff who initiate the profile updates for its members.

5.3 Communication of Climate Policies

During our interviews with administrative staff of German cities, we asked about the recipients who received the

communication about municipal climate work. 5 out of 6 interviewees reported that the cities' inhabitants were the first and most important recipients. However, this communication was not about creating an identity or image, but to mobilise people for climate friendly activities and behaviour. A second reason for prioritising citizens was that the municipalities work needs to be communicated for accountability reasons, as the environmental or climate departments receives public funding. Furthermore, re-election of politicians with an ambitious climate agenda is in the interest of the administration, which in turn can support these politicians by stressing the success of respective policies and programmes.

According to our informants, communicating climate work in the context of TMCNs was mainly directed at peers from other municipalities. This information fits well with the results from the survey, which showed that conferences were very important for the communication of climate work. Here, the focus lies on helping colleagues in other municipalities to improve climate work. Observations from network conferences confirmed that these were mostly visited by staff from municipal administrations.

An exception in this context is the city of Bonn. While an employee from the climate department (responsible for the work with Climate Alliance, Covenant of Mayors and Resilient Cities Campaign) confirmed the described picture, a different employee from the Department of International Affairs and Global Sustainability (responsible for WMCCC) expressed the importance of making Bonn known internationally. For this department, the work with TMCNs is, amongst others, one way to distinguish as a competent city when it comes to conferences and cooperation. This helps the city to compete for hosting international conferences or organisations. Two examples are ICLEI—Local Government for Sustainability and the United Nations Framework Convention on Climate Change (UNFCCC) secretariat, which are both located in the city.

5.4 Membership as Brand Attribute

We analysed the websites of all German cities with more than 50 000 inhabitants, which are members in at least one TMCN, to see if and how the membership is displayed and if it is part of creating a green city brand. We then categorised the display of membership into: "visible", "hidden", "invisible" and "not mentioned". We applied the "visible" category if city websites had a specific section (either paragraphs with heading or separate pages) on one or several of the TMCNs, or if they used any of the logos of the networks on their websites. We used the "hidden" category if websites mentioned one or several of the networks without dedicating specific paragraphs or sections to them. Memberships were labelled as "invisible" if reference to network membership could not be found on the permanent pages of the city website, but if network membership was referred to in documents such as decisions of the local parliament, financial reports or old press releases. The "not mentioned" category was applied if a thorough analysis of the city website and use of the search function did not yield any positive results. Search terms were the German and English name of the network that the cities were members of. We then analysed if the way in which membership is displayed is part of a coherent green place brand.

Out of all of the 130 city webpages, 42 (32%) displayed their membership visibly, in 37 cases (28%) the membership was hidden, 21 (16%) cases were categorised as "invisible" and 30 (23%) did not mention the membership at all. We did not find a single case in which membership was mobilised as an element of a coherent city brand. This is even more surprising when considering that we identified two cities that utilise green topics for their city brand. Castrop-Rauxel ("Europastadt im Grünen"—something along the lines of "European City surrounded by Nature") is member of Climate Alliance, however, we could not find any trace of this membership on the city's webpage. Grevenbroich ("Bundeshauptstadt der Energie"—"Federal Capital of Energy") does not directly refer to its membership in Climate Alliance on their webpages, but we found proof of the membership in the city budget for the year 2014. Consequently, we categorised this case as "invisible". In summary only about 1/3 of all German cities with membership in any of the eight networks displayed their membership visibly and membership does not play any role in the creation of exclusive green city brands.

Finally, we investigated if cities present their climate work in a way that can be interpreted as a separate brand or side-brand and what role TMCNs played in this context. We defined side-brand as a brand that does not represent the entire city, but only one specific field, which is then used as a separate brand. Our search for campaign pages and potential side-brands identified seven campaigns that can be identified as side-brands (Table 2). Again, TMCNs did not play a crucial role in the creation of these side-brands. Furthermore, the fact that these webpages were nearly exclusively in German indicates that they were not designed to inform an international audience.

Table 2. Side brands of German cities

City	Side Brand	Steps in navigation until user hits reference to TMCN membership	Language
Frankfurt am Main	Frankfurt Green City	2	German, some parts in English but not the part referring to TNCMs
Rheine	Klimaschutz Rheine Gemeinsam Zukunft gestalten	1	only German
Bamberg	Klimaallianz Bamberg	3	only German
Tübingen	Tübingen macht blau	Membership not mentioned here	only German
Ludwigsburg	Wissenszentrum Energie	Can only be found by downloading a pdf version of the climate strategy	only German
Aalen	Aalen schafft Klima	2	only German
Herten	Gemeinsam für's Klima	Membership not mentioned here	only German

Note. Table 2 displays the side brands we identified from cities' homepages.

6. Discussion

6.1 Where Are the Brands?

Our analysis produced little proof of an active and widespread engagement of German cities in green city branding activities in the context of TMCNs. This result is surprising because the literature on city branding generally describes the situation as cities being pressed into branding activities—as Insch puts it: "a sense of urgency grips many city authorities to create a brand for their urban place" (Insch, 2011, p. 8). Bearing this in mind, one would expect more activities by German cities in this field, as German cities have a lot to show due to their long climate work experience. Furthermore, TMCNs, in theory, offer a great channel to convey cities' branding messages or alternatively, membership could be used as brand attributes. Instead, cities use their membership in TMCNs to communicate their climate policies to peers in other municipalities and local inhabitants.

Based on the results of this research we conclude that both hypotheses have to be rejected. In the following we present a number of themes that emerged from this research, which can serve as explanation for the discrepancy between our hypotheses and our findings.

6.2 Intentionality

The literature on place branding generally presents a rather straight forward understanding of green policies: they are a) being implemented to increase a city's attractiveness and are b) then communicated through an intentional branding strategy. However, the research conducted for this paper raises questions about both these points.

In the context of green spaces, Braiterman states that "branding a city as green requires bold action" (Braiterman, 2011, p. 77). This statement reveals an underlying assumption of branding literature that is so prevalent that it can be called a systematic mistake. This assumption, which is fully in line with the perception of city authorities as entrepreneurs, is that all action is taken solely for the purpose of branding. Why would it take "bold actions" to brand a city as green if the city already IS green? But if the city already is green prior to the implementation of branding measures, one needs to accept the thought that there might be other reasons for policies that can after their implementation be used for branding purposes.

This observation is confirmed by Busch and McCormick, who describe success cases of decentralised energy applications in German villages (Busch & McCormick, 2014). In these cases, branding was not an initial intention of climate policies, but emerged in the aftermath of successful projects. They also find that local mayors did not base branding efforts on strategic decisions, but that they were faced with demands to accommodate interested guests (international delegations, regional politicians, journalists and not least scientists). This was confirmed by our data. With the possible exception of parts of Bonn's work with TMCNs, none of our informants talked about branding strategies. One informant even spoke about the need to restrict the number of foreign delegations that visit the city and so the city administration introduced a policy that would only allow official visits from partner cities. The reason for this is that official visits bind resources from administrative staff,

which the administration needs, in order to fulfil their "actual" job of working on local climate issues. Also, economic advantages for the local economy are rather limited, as many of the visiting delegations are exempt from paying VAT. This example shows that what might appear to be a branding effort, might just be an attempt to live up to external expectations.

A further interesting aspect, with regard to intentionality, is revealed if the historic development of climate policies in Germany is taken into consideration. Many German cities have a long-standing history when it comes to local climate policies of 20 years or more. This means that the topic of climate change was taken up by German cities long before it had become a "sexy" topic that was useful for green city branding. This fact stands in stark contrast to the assumed motives of place branding literature, namely, making the city more attractive to investors and qualified inhabitants.

6.3 Green Policies as a Political Act

The literature on green city branding depicts green policies as motivated by branding considerations. Our research rejects this idea for the overwhelming majority of German cities. But if it is not branding, then what makes cities implement green policies or ambitious climate work? Bulkeley addresses this question to some degree by pointing at the sense of voluntarism by cities, which shaped early adoptions of local climate policies (2013, p. 74). As explained above, the cities we visited during our fieldwork emerged as success cases from our survey. When asked about reasons for their efforts, our informants referred to the urgency of climate change and the pressing challenges of decarbonising our cities. Emelianoff confirms our findings by pointing out that studies of local energy transitions often underestimate the role of political motivation (Emelianoff, 2013).

Many, if not all decisions that are taken by city authorities are political in nature. This means that policies can be motivated by different factors and not only by an entrepreneurial agenda. Local politicians such as mayors or members of city parliaments can be in favour of green policies because these are part of pre-election promises or simply because local politicians want to do "the right thing" and live up to "environmental responsibility". However, the literature on city branding seems to see these measures exclusively as part of branding efforts. This is problematic, not only because researchers might be looking for the wrong motivation for policies, but also because it depoliticises political acts and reduces them to decisions, based on an entrepreneurial agenda without normative foundation.

6.4 Recipients

When it comes to the communication of these efforts, what appears to be a coherent branding strategy, might indeed be the communication of a coherent climate strategy. Who are then the intended recipients of this communication? The data suggests that most of the communication is directed either at peers in the administration of other cities (external) or the respective city's inhabitants (internal).

The literature on city branding claims that cities are eager to attract new citizens with high human capital, as they will probably be good taxpayers. The presentation of the city should thus focus on the city's attractiveness for a specific (creative) class (Florida, 2002). On their profile website at Climate Alliance, the city of Nürnberg presents the city's "Energy Debt Prevention Programme". This programme helps poor households to implement energy efficiency measures to avoid energy related debt. Such a programme seems neither a very promising way of attracting the creative class nor a manifestation of the entrepreneurial agenda that the literature attributes to city administrations.

Our investigation of cities' side brands (Table 2) showed that most homepages are directed at the local population by providing links to local climate programmes (e.g., subsidies for energy-efficient refurbishment of residential houses or financial support for renewable energy appliances). The pages were nearly exclusively in German (except for parts of Frankfurt's page) and did not seem to be aimed at big corporations, mobile capital or highly qualified future citizens. Rather, the communication of local climate policies predominantly serves as a mobilising narrative for the local population and not as bait for mobile capital on an international market.

6.5 Uniqueness vs. Best Practice Dilemma

As pointed out above, the literature on city branding sees the main motivation for green policies, and branding activities in particular, as part of a general constellation of competition between cities worldwide. However, a core idea of the networks that we investigated for this research is the notion of cooperation. This is particularly true for climate change mitigation measures, which only become effective if many contribute in similar ways. In the context of TMCNs this need for cooperation is covered by what Busch calls the "commitment brokering function" (2015). This function is taken up by all the networks that are both active in Germany and have a mitigation component as part of their portfolio (especially the two biggest ones: Covenant of Mayors and

Climate Alliance). Cities aspire to create a brand based on a unique status, but do so by presenting best-practice, which in turn is supposed to be taken up by other cities, thus undermining the established uniqueness (Insch, 2011). Thus, standardisation, which is desirable in the context of climate change mitigation policies, becomes a threat to the city's brand. In this context, McCann (2013) questions if the reasons for communicating policies and presenting a city's success are purely driven by egoistic branding considerations. Or as he puts it 'many city leaders and other powerful urban policy actors seem to be driven by a desire to be leaders as well as winners' (p. 20) in a global competition (McCann, 2013).

6.6 TMCN Membership as Brand Attribute

As pointed out earlier, our data showed very little indication for the use of network membership as a brand attribute. While a good share of the investigated cities displayed their membership on city webpages, a coherent brand was only encountered in the case of Bonn. However, the brand of Bonn was not directly concerned with green issues but focussed on presenting the city as hub for NGOs. Even cities that are: members in many networks, have many years of experience with climate policies and are known internationally for their climate policies, do not use the network membership for branding purposes. For example, we classified Freiburg im Breisgau as "invisible" as we could not find any information on TMCNs on the main webpages of the city. At the same time, Freiburg is a member of 5 TMCNs simultaneously. The results of investigating the side brands of cities (Table 2), mostly confirmed this observation. It seems that TMCN membership is not something that German cities use for branding purposes. In this context, it is interesting to note that membership to the European Energy Award (EEA) was in many cases displayed more visibly. However, we do not have sufficient data to present a comparison between visibility of EEA membership and TMCN membership.

7. Conclusions

To conclude, our research indicates that either the majority of German cities do not actively engage in green city branding activities in the context of TMCNs, or they are doing a terrible job of it. Very few cities show distinct branding efforts. Despite the potential that TMCNs offers for green city branding, we had to reject both hypotheses. This is surprising as the literature on green place branding raises expectations that contradict our findings. A number of explanations for this discrepancy emerged from our research.

Our data revealed very different motivations for the communication of climate policies from what the literature suggests. Cities may not always be happy to be visited by yet another delegation, to learn about the outstanding local climate policies. Presenting the city's green policies can thus, in some cases, be traced back to reducing external visitors, as all information can be found online. We also found very little indication for the "sense of urgency that grips many city authorities to create a brand for their urban place" (Insch, 2011, p. 8). Literature from the field of branding and marketing depicts green city branding and green policies in general as acts that are exclusively motivated by an entrepreneurial agenda, which aims to attract mobile capital. This drastically oversimplifies the political and social realities of cities. During our investigation, we did not encounter a single case where green policies were motivated by entrepreneurial arguments. Furthermore, our research shows that what could be interpreted as green city branding is, in almost all cases, directed at the local population. All in all we encountered less indication for an entrepreneurial agenda than we expected.

These findings have of course consequences for research conducted in the field of green city branding. Our research underlines the importance of carefully considering the local conditions and involving qualitative data that sheds light on the motives behind alleged branding. An interesting starting point for future research could be to look into the internal decision making processes of cities in the context of TMCN membership and green city branding. Who initiates membership with which motives and how is membership used afterwards? Our research points at a great variety of ways of dealing with TMCN membership amongst German cities. However, we had to adjust the scope for this article so that the issue became manageable. This resulted in an over-simplification with regard to how cities, as actors, were handled. We treated cities and their administrations like coherent actors who take straightforward decisions and implement policies in a coherent manner without encountering internal conflicts. We of course acknowledge that this is not the case and that cities are a political space where different interests collide—even within a cities administration. A reoccurring theme during our research was the question of who takes the decision to join a network. In some cities, like Frankfurt (Main), the administration commands a high degree of autonomy when it comes to these decisions. In other cities, political bodies take these decisions. This can cause some friction as, for example, some mayors have the ambition to present their city through the network while the staff, who have to execute the daily climate work, use the networks for different purposes. Our data showed very little indication for a strong desire of staff to engage in branding efforts, but again, Bonn is the exception.

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References

Abu Dhabi System & Information Centre. (n.d.). *Masdar City*.

Anderberg, S. (2012). Natural Resource Flows and Sustainability in Urban Areas. In *Encyclopedia of Sustainability Science* (pp. 6853-6864).

Anderberg, S., & Clark, E. (2013). The green and sustainable Øresund region: Eco-branding Copenhagen and Malmö. In I. Vojnovic (Ed.), *Sustainability: A global urban context*. East Lansing: Michigan State University Press.

Andersson, I. (2014). Placing place branding: an analysis of an emerging research field in human geography. *Geografisk Tidsskrift-Danish Journal of Geography*, (March), 1-13. http://dx.doi.org/10.1080/00167223.2014.895954

Andersson, I. (2015). *Geographies of Place Branding—Researching through small and medium sized cities*. Stockholm University.

Andonova, L. B., Betsill, M. M., & Bulkeley, H. (2009). Transnational Climate Governance. *Global Environmental Politics*, *9*(2), 52-73. http://dx.doi.org/10.1162/glep.2009.9.2.52

Ashworth, G. J., Kavaratzis, M., & Wannaby, G. (2015). The need to Rethink Place Branding. In G. J. Kavaratzis, M. Warnaby, & G. Ashworth (Eds.), *Rethinking Place Branding: Comprehensive Brand Development for Cities and Regions* (pp. 1-12). Heildelberg: Springer.

Berglund, E., & Olsson, K. (2010). Rethinking place marketing—a literature review. *50th ERSA Congress*, 1-19.

Bouteligier, S. (2013). *Cities, Networks, and Global Environmental Governance: Spaces of Innovation, Places of Leadership* (Vol. 1). Abingdon, Oxon: Routledge.

Braiterman, J. (2011). City Branding through New Green Spaces. In Keith Dinnie (Ed.), *City Branding—Theory and Cases* (pp. 70-81). Basingstoke: Palgrave Macmillan.

Brand, P. (2007). Green subjection: The politics of neoliberal urban environmental management. *International Journal of Urban and Regional Research*, *31*(September), 616-632. http://dx.doi.org/10.1111/j.1468-2427.2007.00748.x

Bulkeley, H. (2013). *Cities and Climate Change*. London: Routledge.

Bulkeley, H., Castán Broto, V., Hodson, M., & Marvin, S. (2013). Introduction. In H. Bulkeley, V. Castán Broto, M. Hodson, & S. Marvin (Eds.), *Cities and Low Carbon Transitions* (Revised pa., pp. 1-10). Milton Park: Routledge.

Busch, H. (2015). Linked for action? An analysis of transnational municipal climate networks in Germany. *International Journal of Urban Sustainable Development*, (July), 1-19. http://dx.doi.org/10.1080/19463138.2015.1057144

Busch, H., & McCormick, K. (2014). Local power: exploring the motivations of mayors and key success factors for local municipalities to go 100% renewable energy. *Energy, Sustainability and Society*, *4*(1), 5. http://dx.doi.org/10.1186/2192-0567-4-5

Checker, M. (2011). Wiped Out by the 'Greenwave': Environmental Gentrification and the Paradoxical Politics of Urban Sustainability. *City & Society*, *23*(2), 210-229. http://dx.doi.org/10.1111/j.1548-744X.2011.01063.x

Chiesura, A. (2004). The role of urban parks for the sustainable city. *Landscape and Urban Planning*, *68*, 129-138. http://dx.doi.org/10.1016/j.landurbplan.2003.08.003

CIA. (2015). CIA Factbook. Retrieved March 9, 2015, from https://www.cia.gov/library/publications/the-world-factbook/

City of Växjö. (2007). *Welcome to Växjö The Greenest City in Europe*. Växjö.

Cugurullo, F. (2013). How to Build a Sandcastle: An Analysis of the Genesis and Development of Masdar City.

Journal of Urban Technology, *20*(1), 23-37. http://dx.doi.org/10.1080/10630732.2012.735105

Davies, A. (2005). Local action for climate change: transnational networks and the Irish experience. *Local Environment*, *10*(1), 21-40. Retrieved from http://dx.doi.org/10.1080/1354983042000309298

Dinnie, K. (Ed.). (2010). *City Branding—Theory and Cases*. Palgrave Macmillan.

Emelianoff, C. (2013). Local Energy Transition and Multilevel Climate Governance: The Contrasted Experiences of Two Pioneer Cities (Hanover, Germany, and Vaxjo, Sweden). *Urban Studies*, *51*(7), 1378-1393. http://dx.doi.org/10.1177/0042098013500087

Florida, R. (2002). *The rise of the creative class: And how it is transforming work. Leisure, community and everyday life*. New York: Basic Books.

Gulsrud, N. M., Gooding, S., Konijnendijk van den Bosch, C. C., & Bosch, C. C. K. Van Den. (2013). Green space branding in Denmark in an era of neoliberal governance. *Urban Forestry and Urban Greening*, *12*(3), 330-337. http://dx.doi.org/10.1016/j.ufug.2013.03.001

Gustavsson, E., & Elander, I. (2012). Cocky and climate smart? Climate change mitigation and place-branding in three Swedish towns. *Local Environment*, *17*(8), 769-782. http://dx.doi.org/10.1080/13549839.2012.678319

Gustavsson, E., Elander, I., & Lundmark, M. (2009). Multilevel governance, networking cities, and the geography of climate-change mitigation: Two Swedish examples. *Environment and Planning C: Government and Policy*, *27*(1), 59-74. http://dx.doi.org/10.1068/c07109j

Hakelberg, L. (2011). *Governing Climate Change by Diffusion* (1st ed.). Berlin: Freie Universität Berlin, Forschungszentrum für Umweltpolitik. Retrieved from http://edocs.fu-berlin.de/docs/servlets/MCRFileNodeServlet/FUDOCS_derivate_000000001736/Hakelberg_ffu_report_08-2011.pdf?hosts=

Hakelberg, L. (2014). Governance by Diffusion : Transnational Municipal Networks and the Spread of Local Climate Strategies in Europe. *Global Environmental Politics*, *14*(1), 107-129. http://dx.doi.org/10.1162/GLEP

Hanna, S., & Rowley, J. (2008). An analysis of terminology use in place branding. *Place Branding and Public Diplomacy*, *4*(1), 61-75. http://dx.doi.org/10.1057/palgrave.pb.6000084

Harvey, D. (1989). From managerialism to entrepreneurialism: the transformation in urban governance in late capitalism. *Geografiska Annaler. Series B, Human Geography*, *71*(1), 3-17. http://dx.doi.org/10.2307/490503

Holgersen, S., & Malm, A. (2015). ”Green fix” as crisis management. Or: In which world is Malmö the world’s greenest city? *Geografiska Annaler: Series B*, *in press*.

Insch, A. (2011). Branding the City as an Attractive Place to Live. In K. Dinnie (Ed.), *City Branding—Theory and Cases* (pp. 8-14). Basingstoke: Palgrave Macmillan.

Jonas, A. E. G., Gibbs, D., & While, A. (2011). The New Urban Politics as a Politics of Carbon Control. *Urban Studies*, *48*(12), 2537-2554. http://dx.doi.org/10.1177/0042098011411951

Joss, S., Cowley, R., & Tomozeiu, D. (2013). Towards the ‘ubiquitous eco-city’: An analysis of the internationalisation of eco-city policy and practice. *Urban Research & Practice*, *6*(1), 54-74. http://dx.doi.org/10.1080/17535069.2012.762216

Kamal-Chaoui, L., & Roberts, A. (2009). *Competitive cities and climate change—OECD Regional Development Working Paper*. Paris. Retrieved from http://www1.oecd.org/governance/regional-policy/44232251.pdf

Kavaratzis, M. (2005). Place Branding: A Review of Trends and Conceptual Models. *The Marketing Review*. http://dx.doi.org/10.1362/146934705775186854

Keiner, M., & Kim, A. (2007). Transnational City Networks for Sustainability. *European Planning Studies*, *15*(10), 1369-1395. http://dx.doi.org/10.1080/09654310701550843

Kern, K., & Bulkeley, H. (2009). Cities, Europeanization and Multi-level Governance: Governing Climate Change through Transnational Municipal Networks. *JCMS: Journal of Common Market Studies*, *47*(2), 309-332. http://dx.doi.org/10.1111/j.1468-5965.2009.00806.x

Kronsell, A. (2013). Legitimacy for climate policies: politics and participation in the Green City of Freiburg. *Local Environment*, *18*(8), 965-982. http://dx.doi.org/10.1080/13549839.2012.748732

Lee, T., & van de Meene, S. (2012). Who teaches and who learns? Policy learning through the C40 cities climate network. *Policy Sciences*, *45*(3), 199-220. http://dx.doi.org/10.1007/s11077-012-9159-5

Lucarelli, A., & Berg, P. O. (2011). City branding: a state-of-the-art review of the research domain. *Journal of Place Management and Development*, *4*(1), 9-27. http://dx.doi.org/10.1108/17538331111117133

Lucarelli, A., & Brorström, S. (2013). Problematising place branding research: A meta-theoretical analysis of the literature. *The Marketing Review*, *13*(1), 65-81. http://dx.doi.org/http://dx.doi.org/10.1362/146934713X13590250137826

Maria, V., Rahman, M., & Collins, P. (2013). Urban Heat Island Effect: thermal response from different types of exposed paved surfaces. *International Journal of Pavement Research and Technology*, *6*(4), 414-422. http://dx.doi.org/10.6135/ijprt.org.tw/2013.6(4).414

Marin-Aguilar, J. T., & Vila-López, N. (2014). How can mega events and ecological orientation improve city brand attitudes? *International Journal of Contemporary Hospitality Management*, *26*(4), 629-652. http://dx.doi.org/10.1108/IJCHM-03-2013-0117

McCann, E. (2013). Policy Boosterism, Policy Mobilities, and the Extrospective City. *Urban Geography*, *34*(1), 5-29. http://dx.doi.org/10.1080/02723638.2013.778627

McCann, E. J. (2009). City marketing. In *International encyclopedia of human geography*. Elsevier.

Middleton, A. C. (2011). City Branding and Inward Investment. In K. Dinnie (Ed.), *City Branding—Theory and Cases* (pp. 15-26). Basingstoke: Palgrave Macmillan.

Niedomysl, T., & Jonasson, M. (2012). Towards a theory of place marketing. *Journal of Place Management and Development*, *5*(3), 223-230. http://dx.doi.org/10.1108/17538331211269639

Pachauri, R. K., Allen, M. R., Barros, V. R., Broome, J., Cramer, W., Christ, R., … Ypersele, J.-P. Van. (2014). *IPCC Climate Change 2014: Synthesis Report*.

Sanford, L. (2010). A tale of two eco-cities. *Modern Power Systems* (pp. 20-22). Retrieved from http://cat.inist.fr/?aModele=afficheN&cpsidt=22944914

Strunz, S. (2014). The German energy transition as a regime shift. *Ecological Economics*, *100*, 150-158. http://dx.doi.org/10.1016/j.ecolecon.2014.01.019

Syssner, J. (2012). *Världens bästa plats? Platsmarknadsföring, makt och medborgarskap [The world's best place? Place marketing, power and citizenship]*. Lund: Nordic Academic Press.

Tzoulas, K., Korpela, K., Venn, S., Yli-Pelkonen, V., Kaźmierczak, A., Niemela, J., & James, P. (2007). Promoting ecosystem and human health in urban areas using Green Infrastructure: A literature review. *Landscape and Urban Planning*, *81*, 167-178. http://dx.doi.org/10.1016/j.landurbplan.2007.02.001

UN-Habitat. (2011). *Cities and Climate Change—Global Report on Human Settlements 2011. Building Safer Cities: The Future of Disaster Risk*. London.

United Nations. (2013). Millenium Development Indicators—Carbon Dioxide emissions.

While, A. (2013). The Carbon Calculus and Transitions in Urban Politics and Political Theory. In H. Bulkeley, V. Castán Broto, M. Hodson, & S. Marvin (Eds.), *Cities and Low Carbon Transitions* (Revised pa.). Milten Park: Routledge.

Zeppel, H. (2013). Carbon Management by Queensland Local Councils: Citizenship for Transitioning to a Low Carbon Future. *Journal of Corporate Citizenship*, (49), 117-136. http://dx.doi.org/10.9774/GLEAF.4700.2013.ma.00009

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Article III

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Challenges in Sustainability

Research Article

Identifying the "Usual Suspects"—Assessing Patterns of Representation in Local Environmental Initiatives

Paul Fenton[1,*] and Henner Busch[2,3]

[1] Division of Environmental Technology & Management, Linköping University, Sweden
[2] Lund University Centre for Sustainability Studies, Sweden
[3] Lund University Centre of Excellence for Integration of Social and Natural Dimension of Sustainability, Sweden

* Corresponding author: E-Mail: paul.fenton@liu.se; Tel.: +46 13285620; Fax: +46 13281101

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Abstract: An increasing body of literature explores the role of transnational municipal networks (TMNs) in governing sustainable development. As associations, one key task of TMNs is to represent their members through production and dissemination of information and knowledge concerning municipal action for sustainable development. Case studies, often emphasising best practice, are used by many TMNs to fulfil this task. Nevertheless, despite strong scrutiny concerning the use of case studies in "policy mobilities" research, there have been limited attempts to quantify the ways in which TMNs present and disseminate case studies and, by doing so, generate trends of presence and absence in literature on sustainable development. Assessing patterns of representation for continents, countries, municipalities and themes across nine international case study collections published by ICLEI - Local Governments for Sustainability since 1991, this study responds to this research gap and identifies the presence of "usual suspects" in the ICLEI case study collections, along with notable absentees. By doing so, the study contributes to policy mobilities research and literature on TMNs, by encouraging reflection and further research concerning the representation patterns influencing which municipalities and what topics are presented in discourses on sustainable development.

Keywords: ICLEI; case studies; comparative urbanism; municipalities; TMNs; urban sustainability

1. Introduction

This paper explores the role of transnational municipal networks (TMNs) in governing for sustainable development, with specific focus on the production and dissemination of information and knowledge concerning municipal efforts to increase sustainability. Municipalities, it is claimed, play an important role in a transition to sustainable development that requires multi-level governance and diverse forms of action [1–3]. As such, municipalities have initiated a diverse range of experiments aiming to contribute to sustainable development at the local and global level [4,5]. Various TMNs have been established to provide coordination and support functions that may add value to, and help spread knowledge about, the actions of single municipalities [6].

TMNs are typically associations, organised as networks of members who may pay subscription fees and usually receive services in a variety of forms [7]. TMNs may address multiple themes or single issues, be formed of particular types of municipality, or represent different geographic ar-

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eas [8,9]. As such, it is difficult to directly compare TMNs [10]. ICLEI - Local Governments for Sustainability (commonly known as ICLEI, and formerly known as the International Council for Local Environmental Initiatives) has, since its foundation in 1990, emerged as a prominent TMN addressing sustainable development [11–13].

ICLEI provides a range of information services aimed at members, stakeholders and the general public. This paper focuses on ICLEI's use of case studies as an information tool, assessing the continents, countries, municipalities and themes represented in nine collections of case studies. The paper identifies patterns of representation across these collections and assesses ways in which the composition of the case study collections (i.e. the representation of certain types of activities in particular locations) may influence the framing of the practice and study of sustainable development in municipalities, and the possible implications of such representation for research and practice [14]. By doing so, this paper contributes to literature considering the role of materials (e.g. publications) in "policy mobilities" [15,16].

2. TMNs: Roles and Functions

TMNs are said to help municipalities address local, national and transnational concerns by providing services that fulfil local (intra-municipal), horizontal (inter-municipal) and vertical functions (national, international) [17,18]. Kern and Bulkeley [12] identify three main characteristics of TMNs: 1) voluntary membership; 2) self-governing polycentric and non-hierarchical structures; and, 3) provision of implementation support to members (as opposed to the lobbying of conventional non-governmental organisations (NGOs)). As such, TMNs often act as mediators and convenors, promoting "governance by diffusion" [5,19,20]. TMNs may be seen as a dynamic alternative to traditional forms of government [8] or as "quasi-governmental" actors representing conventional interests embedded in the international system [17]. Giest and Howlett [21] argue that TMNs function more effectively when working with the support of national governments and when focused on specific geographical regions (cf. [7]).

This suggests that the *location* of TMN activities may be as relevant as the topics or themes that they address. Studies by Dolowitz et al. [22] support this perspective and downplay the diffusion effects of TMNs, noting that the policy searches of municipalities tend not to be systematic but are more often based on convenience and geographic proximity. That said, *when* there is evidence of careful and comprehensive searches, diffusion (or at least learning) may be said to occur [23]. In order to be representative of their members (and/or constituency group), TMNs thus face a challenge to accommodate the interests of both the typical and more ambitious municipalities, for whom different types of information and services may be relevant.

Representing members and their interests is a sizeable challenge for TMNs. Various authors observe the over-representation of certain cities or categories of cities in literature on sustainable development and within TMNs [24–26]. In some cases, this may lead to the development of "core-periphery" dynamics influencing the operations, activities and thematic focus of TMNs [1,7,8]. On such occasions, prominent and active members may contribute to the consolidation or diffusion of particular norms, themes or solutions, or dominate the internal governance of TMNs. Given that TMN members only ever account for a fraction of their possible constituency, issues or perspectives relevant to the large group of non-members may be downplayed or silenced in TMN agendas (indeed, the non-representative nature of TMNs, and their overall significance, remains under scrutiny, see e.g. [27]). TMNs should thus be careful to avoid representing only "the usual suspects" [8,28].

An overview of several theoretical frameworks proposed to describe the roles and functions of TMNs can be found in Table 1. One task that is common to these frameworks is the production and dissemination of information and knowledge, and specifically the communication of best practices aiming to facilitate learning for improved sustainability performance. Best or good practice has no clearly defined meaning, yet may be assumed to refer to Jänicke and Weidner's definition of "success in comparative terms as best (or nearly best) achievement" and thus encompass pioneering, radical and incremental approaches in comparison to the status quo ([29], pp. 14–15). Nevertheless, McCann and Ward write that "neither success nor failure is absolute. One does not make sense without the other" ([30], p. 828). The absence of best practices, indeed the absence of a case, may reveal and legitimise "attempts to change and embed new policy models" ([30], p. 829). There is thus a need to critically assess patterns of presence and absence and their implications in collections of materials such as case studies.

Best practices may also play a role in vertical governance, demonstrating "what is possible" to national governments, and thereby becoming tools for the advocacy and lobbying efforts of TMNs. Similarly, some municipalities use TMNs as platforms when aiming to raise their profile for green place branding purposes [31,32], although this may not be the primary aim of all municipalities in such networks [33]. Finally, best practice examples may enable benchmarking processes [34,35]. In this case best practice would contribute to the internal governance of TMNs and their rule setting processes, as well as learning in municipalities.

Table 1. Overview of network roles and functions.

Function/ framework	Bulkeley et al. (2003) [17]	Andonova et al. (2009) [36]	Feldman (2012) [5]	Bouteligier (2013) [37]	Busch (2015) [31]
1	Knowledge dissemination (case studies of best practice as tool for benchmarking)	Information sharing (communication of best practice)	Production & spread of information (communication of best practice)	Exchange of information (communication of best practice)	Platform for members (communication of best practice)
2	Lobbying	Capacity building & implementation	Evolution of policies	Increase of member capacities	Consultancy
3	Implementation of EU policies	Rule setting	Initiate local action	Advocacy and lobbying	Commitment brokering
4	Policy initiation				Advocacy and lobbying

3. Case Studies as Dissemination Tools

Although the precise aims of TMNs when disseminating information may vary, various TMNs use case studies as an information tool (e.g. C40 Cities, Energie Cités, Eurocities) [38]. The publication of case studies enables TMNs to fulfil multiple objectives, e.g. by sharing information between members and more broadly, to society. Such case studies may focus on general issues of relevance to sustainable development, or more specifically on activities linked to specific themes that in turn may be linked to associations' thematic priorities or financing; case studies may also promote members or be offered as an incentive to get non-members to join. Case studies thus act as a functional tool for awareness-raising, exchange of ideas and capacity-building. However, recent literature has highlighted a number of possible problems with the ways that case studies present concepts or information.

For example, many case studies focus on a single action in a specific municipality addressing a single theme. This striation of "sustainable development" may risk making the concept appear geographically or thematically specific or limited, and thereby consolidate isolationist or elitist norms [26,39,40]. For example, some writers (such as [41–45]) note an imbalance in the presentation of "developed" and "developing" world narratives in academic literature, leading to over-representation of cases from Europe and North America. Similarly, McFarlane [24] and Pierre [46] suggest theories of urban governance developed in studies of North American and European cities dominate over alternatives. In other words, the frequency, framing and form of assessments used by academics may distort understanding of urban contexts and result in the presentation of frequently-occurring cases dubbed "usual suspects" [28].

There are other potential problems with the use of case studies. For example, solutions proposed in some case studies may accentuate the problems identified in others [29,34,47,48] and context-specific analysis is often developed and presented with limited reference to the global challenges that stimulate local action; such lack of performativity means that analysis is frequently detached from, or devoid of, meaning [39]. Comparison between cases may be difficult because, as even advocates of comparative urban research note, comparative analysis depends on "some degree of reductionism as a step in preparing empirical observations" ([46], p. 447; cf. [14]).

Others contend that case studies have limited utility, even when they provide interesting information, as the scope and format of case studies tends to limit the amount of information that can be provided. Even in a non-comparative format, complex issues, such as institutional, political, socio-economic or environmental dimensions, may be presented in an overly simplified manner, or even discounted by readers on the basis of assumptions about perceived relevance [22]. Such perceptions have led to criticisms of municipalities as being "purposefully conservative" doing little more than that which they consider practical or convenient [35,49]. Whilst there are not necessarily clear alternatives to the use of case studies, McCann and Ward are among the authors stating the need to explore the implications of presence and absence in more detail [30].

In sum, recent works suggests that the over-representation of case studies in academic literature on urban sustainability may contribute to an over-representation of certain kinds of municipalities, e.g. cities of a certain size or in certain locations—at the expense of others. Cities that are not represented, under-represented or less visibly active may thus be considered to be either "free riders" or "silenced" in debates on sustainable development. Against this background, this article focuses on the extent to which different continental regions, countries, municipalities and themes are represented in nine collections of international case studies published by ICLEI. In particular, the paper investigates a claim made in a major ICLEI publication.

In 2012, ICLEI published the global review "Local Sustainability 2012: taking stock and moving forward" [50]. As a complement to the review, a compendium of case studies, "Showcasing progress", was also published. "Showcasing progress" included short versions of 14 case studies in the main ICLEI Case Study series. ICLEI was keen to stress that the featured case studies were "not the usual suspects", suggesting their awareness that some case studies

perhaps risk becoming too familiar, repetitive or informative due to their frequent appearance in collections [28]. How well does ICLEI's claim stand up? Did the compendium feature a new group of municipalities? Or did the "usual suspects" reappear? By illustrating patterns of representation, the article will explore if "usual suspects" exist in this report and across ICLEI's collections of case studies, and consider the implications of such occurrences for both theory and practice.

4. ICLEI and Case Studies

4.1. The History of ICLEI

In September 2015, ICLEI celebrated the 25th anniversary of its foundation. A short history of ICLEI follows (cf. [51]). In 1989, 35 local government leaders from North America met and pledged to establish local regulations to phase out the use of ozone-depleting chemicals. At this meeting, "Larry Agran, Mayor of Irvine, California, USA and Jeb Brugmann imagined an agency that could coordinate local government responses to global environmental problems" [52]. An international consultation with local government officials was held, and in September 1990, more than 200 local governments from 43 countries attended the World Congress of Local Governments for a Sustainable Future. The Congress concluded with foundation of the International Council for Local Environmental Initiatives (ICLEI) and adoption of ICLEI Charter [52].

Operations began in March 1991, with the basic organisational structure of ICLEI being established: ICLEI World Secretariat, hosted by the City of Toronto, Canada, and a European Secretariat in Freiburg, Germany, opened. This world-regional structure has developed over time and today, ICLEI maintains eight regional Secretariats and four national offices [53]. ICLEI regions broadly correlate with the UN Geoscheme of regions and sub-regions, which is used for statistical purposes in the international system. Since 2010, ICLEI World Secretariat has been hosted by the City of Bonn, Germany, with six thematic centres located at offices around the world [54]. The thematic centres partly reflect the widening and deepening of ICLEI's mandate and activities over time, as did the formal change in the organisation's name made in 2003, when ICLEI became ICLEI - Local Governments for Sustainability. Recent years have also seen an increase in ICLEI membership. In 2006, New Delhi became the 500th active ICLEI member, and by November 2008, membership doubled when Mumbai joined. There are presently around 1000 active members of ICLEI in over 80 countries.

4.2. Agendas and Activities

ICLEI defines itself as having a triple role: as an association of municipalities, a movement of municipalities, and an agency for municipalities. In other words, ICLEI provides a forum for members to meet and represents its members in other arena (e.g. UNCSD, UNFCCC), whilst initiating and participating in actions to raise awareness or increase capacity of municipalities and other stakeholders. The broad and multi-dimensional role of ICLEI is realised through a variety of initiatives, including campaigns, projects, alliances and awareness-raising activities including conferences.

For example, at the UN Conference on Environment and Development in 1992, ICLEI proposed the Local Agenda 21 initiative, which subsequently developed into a significant conceptual and practical tool for municipalities to frame and develop their work around environmental issues. Similarly, the Cities for Climate Protection Campaign (CCP), launched at the First Municipal Leaders Summit on Climate Change in 1993, subsequently developed into a significant reference point for municipal work on climate change [55]. ICLEI also plays a central role in a number of other initiatives, such as the European Sustainable Cities and Towns Campaign, and the EcoMobility Alliance.

4.3. Information as a Key Tool

Dissemination of information occurs on multiple levels and using a variety of means. ICLEI has a global website, plus dedicated websites for different continental regions, national offices, initiatives, alliances, projects and conferences. Dissemination actions include regular newsletters, e-newsletters, conference publications, books, reports, manuals, training guides, and case studies. Dissemination of information has multiple objectives, such as providing information on ICLEI as an organisation; fulfilling associative needs by representing members; or awareness-raising or promotion of past or ongoing actions by ICLEI or its members.

4.4. ICLEI Case Study Collections

Since its inception, ICLEI has published case studies in various series that are both international and national/regional in scope. The publication of case studies and promotion of particular practices suggests a willingness to influence other municipalities and promote replication (in appropriate contexts) of the described approach. Interest is generated by describing an approach that is considered singular or unique, innovative or successful, implying a normative evaluation of case studies as "good" or "best" practices [56]. ICLEI case studies aim to present best practice in its local context, by describing a project and its results; identifying lessons learned; and assessing the "replication potential" and costs of a project [57,58].

Case studies may represent the experiences of member municipalities or ICLEI initiatives to specific or general audiences; highlight specific themes or topics (advocacy); or support capacity-building by illustrating particular methods, ideas or processes. For example, the main ICLEI Case Study series, issued by ICLEI World Secretariat, addresses international municipal efforts for sustainable development across multiple themes. In contrast, ICLEI Oceania Water Campaign case study series presents thematic information

with exclusive focus on the Oceania region. Other case study collections have been published in relation to specific international or regional projects or initiatives (e.g. [56,59]).

5. Method

5.1. Data Collection

In early 2013, ICLEI launched a new global website (www.iclei.org). This replaced the previous website, which was archived at (http://archive.iclei.org). The archived website remains online, although many of the internal links no longer function. On the old website, ICLEI displayed its publications in the section "ICLEI Publications". There were five categories, each of which contained sub-sets of publications with varying themes, purposes or target groups. These categories were: ICLEI Case Studies; ICLEI Briefing Sheets; ICLEI Papers; ICLEI Global Reports; and, ICLEI Annual Reports.

On 21 February 2013, unaware of ICLEI's intention to archive the website, the researchers downloaded all ICLEI case studies. A subsequent check ensured no further publications were added prior to archiving, meaning the downloaded files may be said to provide a complete and accurate record for the period from ICLEI's foundation up until the end of February 2013. Case studies published during 2013–2015 have subsequently been downloaded from the new website, providing an almost complete record of ICLEI case studies and enabling assessment of the collections' development over time. It is possible that other documents relevant to the study but unavailable on the website exist in other forms or locations, e.g. as paper copies, or in collections not mentioned on the Publications page. However, notwithstanding this uncertainty, it may be reasonably inferred that the case study collections used as the empirical data for this study are representative and likely to provide interesting insights into the ways in which municipal work for issues concerning sustainable development are portrayed by this particular TMN.

5.2. Scope

Four major decisions were made to limit the scope of the study. These were:

(1) Attempt to provide a complete record of the online collections published by ICLEI up to the end of 2015, by including material from the old website archive.iclei.org and (for the period 2013–2015) the new iclei.org.

(2) Focus only on case study collections that are international in scope (see Table 2). This choice was necessary because the organisational structure of ICLEI is simultaneously global and continental/regional. As such, some, but not all, ICLEI regional Secretariats issues case study collections that focus exclusively on their member countries. Including such collections would thus distort the balance of this study. The second choice thus limits the scope of the case study collections assessed in this study to those that are international in scope, as opposed to collections primarily defined by their geographic or thematic limitations. However, this second choice necessitates a third choice.

(3) Present results from the analysis of the collections, together with a brief separate analysis of the main series, in order to distinguish more clearly between the two types of collection.

(4) Make limited analysis of the thematic content of case studies. By including both the main ICLEI Case Study series (which may cover any theme under the umbrella of sustainable development) and other collections that are thematic or project-related yet international in scope, the ability to draw conclusions concerning thematic focus is likely to be skewed somewhat in favour of the themes addressed in such collections.

In other words, it is possible to be quite categorical about data concerning continents, countries and cities, whereas the study of themes or topics addressed in case studies necessarily implies some degree of interpretation and subjectivity, in the sense that themes or topics may overlap, or there may be discrepancies between words and content within or between case studies. It is not possible to be quite so categorical. Thus, to clarify, the thematic results presented in this study have been developed in the following way.

First, the key words from the titles of case studies have been added to the main data sheet (see below) in which empirical data are stored. Key words are verbs, adjectives or nouns that influence the composition of the title and its emphasis. To ensure data was collected from all studies, in the absence of a clear title this information was extracted from the case study's summary or abstract. In the same way, approximations or synonyms were used to simplify data collection. As such, the thematic analysis provides a reasonably good overview of the thematic focus of case studies, but little information about the content of studies. The thematic data are indicative and should only be interpreted as such. Deeper review or content analysis would be required to make any larger claims concerning its significance or the evidence of trends, etc.

In addition, it should be noted that the collections do not only present municipal examples. A small number of other sub-national entities such as counties, regions or states are represented, as are several national initiatives (e.g. from Mexico, Norway and India), one company (from the USA), and ICLEI CCP campaign. There is also a risk that municipalities represented for specific actions in the main ICLEI Case Study series reappear in the other collections (i.e. that the main topic of a case study is repeated across collections). Ultimately, the main focus of this paper is not to provide methodological certainty about such issues, but rather to identify the frequency at which municipalities are represented in international collections and illustrate general trends concerning themes.

Table 2. Examples of case study collections available from iclei.org or archive.iclei.org that are included or excluded from this study.

Scope	Collection	Comments
298 case studies included	ICLEI Case Study series - (unspecified start) from 1991 - Dec. 2015.	- This collection addresses multiples themes. - The case studies are numbered 1-181. - However: case studies 98-100 are not listed on the website and case studies 94-97 are duplicated as 104-107. - Case study 155 comprises not one but seven case studies that were published jointly with the International Energy Agency (IRENA) in 2012, i.e. +6. - Thus, the main Case Study series contains 180 publications (i.e. (181-7) + 6).
	Climate Roadmap series - Published 2009 in connection with UNFCCC COP15.	- 32 case studies. - 13 case stories.
	EcoMobility (2011) - Related to work of the EcoMobility Alliance.	- 13 case stories.
	GIZ-ICLEI NEXUS collection (2014)	- Examples of approaches to resource management and service delivery. - 8 case studies and 29 shorter case stories.
	Local Action for Biodiversity (2008) - Related to project of the same name.	- 23 case studies.
	SWITCH Urban Water Management (2011) - Related to project of the same name.	- 6 case studies.
	URBAN LEDS project (2015)	- 1 case story.
	WBCSD-ICLEI Innovative City-business Collaboration (2015)	- 6 case stories.
Excluded	Federation of Canadian Municipalities	- External collection linked from archive.iclei.org with no obvious ICLEI logo; national scope.
	ICLEI Africa case studies	- Duplication of main ICLEI Case Study series.
	ICLEI Canada case studies	- National scope; also access restricted to ICLEI members.
	ICLEI East Asia publications, including Korea and Japan case studies	- National scope; published in Japanese and Korean.
	ICLEI Oceania case studies	- Case studies are included, but exclusively concentrate on Australia.
	ICLEI South East Asia - Based on Canadian International Development Agency project.	- Regional collection presenting cases from Indonesia, Thailand, and Philippines.
	Innovation, Knowledge and Exchange Network (IKEN)	- External collection linked from archive.iclei.org but with no ICLEI logo.
	Local Renewables case studies	- Duplication of main ICLEI Case Study series plus one external case study.

5.3. Compiling the Data

Data was compiled in excel, with sub-sheets developed for specific categories. The main sheet records the issues such as the case study collection, case study number, the availability of the source document, the case study title, municipality/organisation in focus, country, continental region, year of publication, ICLEI membership status (July 2013), and themes addressed. The sub-sheets contain collations of different information sets, e.g. the results on cities presented below.

6. Results

6.1. Results: All International Case Studies

A total of 298 case studies were gathered from nine collections. Figure 1 shows the share each continental region has of the total number of case studies. Studies focusing on the Americas account for the largest share, with 115 studies, and Europe has the largest share for a single continental region.

Figure 2 shows how the representation of examples from different continental regions in case studies has increased for all regions over time (in the case of North America, due to a significant number of new studies published during 2015). In particular, the portrayal of case studies from Asia and Europe has increased rapidly during the second period. A detailed breakdown per country is provided in Figure 3, which illustrates patterns of representation per continental region and identifies countries that occur frequently in the collections.

6.2. National Results for Different Continental Regions

6.2.1. Africa

During the first period, case studies from six African countries were represented in the collections, including one study from Senegal in West Africa, a Francophone nation. This example stands out, being the only such case during the two periods. Indeed, despite an overall, if small, increase in the number of studies on African examples during the second period, fewer African countries are represented in this period. South Africa emerges as the dominant subject of case studies. During both periods, there are no examples from Northern Africa, the Sahara or the Horn, including populous countries such as Nigeria, Ethiopia, Egypt or DR Congo. South Africa is, of course, a fairly urbanised nation, yet so too are nations such as Algeria, Libya, or Tunisia. It is thus interesting to consider why the presentation of "Africa" in ICLEI case study collections has increasingly come to mean Anglophone, Southern (South) Africa.

6.2.2. Asia

The Asian continent has the largest share of the world's population and in recent decades has been subject to rapid urbanisation. It is thus no surprise that there was an increase in studies on Asian nations over time. In particular, examples from India and Japan were the subject of a large number of case studies, particularly compared to the first period. Perhaps surprisingly, China—with its large population and economy, significant environmental challenges, and rapid urbanisation—is not so well represented, although several other populous countries in the region, such as Iran, Pakistan and Vietnam are not subjects of any case studies. Interestingly, South Korea, as host to ICLEI offices, receives no more representation than Thailand. No countries from Central Asia are represented in case studies.

6.2.3. Europe

The pattern of representation in case studies for European countries was fairly consistent, albeit with increased volume and diversity after 2002. However, few examples from former-Soviet countries are recorded as case studies, and together, Germany and Sweden account for 47% of all European case studies. In the case of Germany this is perhaps unsurprising as the country has Europe's largest population and economy and a long history of environmental engagement. Moreover, ICLEI's European Secretariat has been located in Freiburg since 1991, and since 2010, the World Secretariat has been based in Bonn.

However, the number of Swedish examples may appear, given the country's size, surprising, despite the country's history with Local Agenda 21 and its other efforts to increase sustainability. The Swedish share perhaps reflects the strong degree of municipal autonomy and resource base of Swedish municipalities [60,61]. It may also be influenced by resources of those seeking to access (and produce) information, in that some forms of policy search and information collection (e.g. search engines) may favour examples that are (a) already disseminated, (b) documented, and (c) in English. Many Swedish municipalities have, over a long period of time, successfully managed to document and disseminate their experiences in English to wide audiences via Internet.

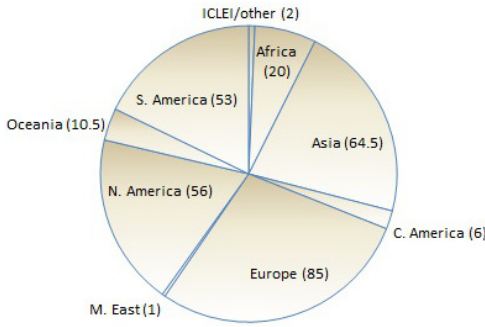

Figure 1. Share of all case studies per continental region. To clarify, a 0.5 study signifies that the study concerned two municipalities in the same or different countries, thus "halving" the study.

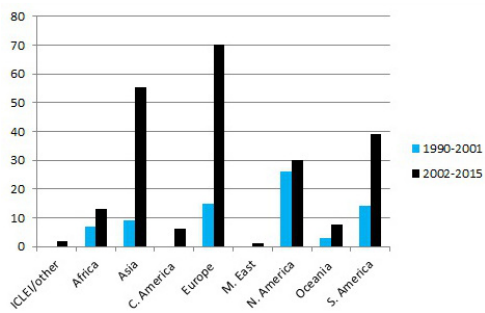

Figure 2. Number of studies per continental region during two time periods.

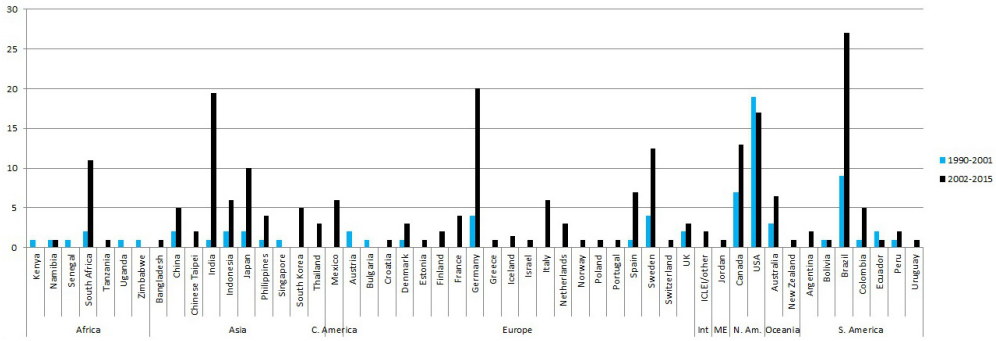

Figure 3. Number of case studies per period and region in the nine collections.

6.2.4. North and Central America

These two continental regions are presented together as only three countries are represented in the case study collections. Two things are immediately obvious about the results: first, that Mexico is the only country from Central America and the Caribbean with case studies in the collection; and second, the reduction in examples from the USA during the second period (offset by seven publications during 2015). Indeed, Canadian municipalities are the subject of almost as many case studies as US municipalities since 2002. This may reflect a number of issues, e.g. US domestic politics (although some would argue Canadian politics with regard to environmental issues has not been dissimilar); an increase in the availability of other platforms (e.g. the US Conference of Mayors); or the strong role of Canadian municipalities in ICLEI, with Toronto hosting the World Secretariat from 1991-2010, Edmonton hosting the 2009 World Congress, and with Canadian representatives on ICLEI's Executive Committee.

6.2.5. Oceania

ICLEI's Oceania case study series presents only Australian examples, so it is perhaps no surprise that Australian examples also dominate the Oceanian share in other collections too. One example from New Zealand is present, yet no examples from other countries are included. Both Australia and New Zealand have significant urban hubs and strong local government systems; this may not be the case for all countries in the Oceania region.

6.2.6. South America

The pattern of representation evident for South America is somewhat similar to that of Africa, in the sense that volume increases in the second period whilst diversity does not. Portuguese-speaking Brazil dominates the collection, and within Brazil, the examples of Belo Horizonte (host to ICLEI's 2012 World Congress) and Betim from the State of Minas Gerais account for 32% of the national total (and 22% of the South American total).

6.3. How Frequently Are Countries and Municipalities Represented?

The significant share of two Brazilian cities from one State in their national and continental region totals highlights the need to delve deeper into the issue of specific case representation.

As previously stated, the majority of the case studies portray municipal examples. Of the 298 case studies assessed in this sample, 144 case studies (48%) present examples appearing only once in the collections, whereas the remaining 154 case studies (52%) present examples from 52 frequently occurring municipalities. This means that, in total, 196 municipalities and/or other actors are represented by the case study collections. Of these, the 52 frequently occurring municipalities represent around 25% of the examples, yet over half the total number of case studies.

In the following section, the composition of the 154 multiple cases will be assessed. Europe (47.5), South America (40) and North America (31) have the largest number of cases, followed by Asia (23.5), Africa (10), and Oceania (2). There are no multiple cases from Central America. The share of multiple case studies in each continental region's total varies considerably (see Figure 4). This measure reveals the relative diversity of the case studies represented per continental region.

The same data can be used to show the share multiple case studies in each continental region have in the total 298 case studies. Figure 5 shows that multiple case studies from Europe (16%) and South America (13%) account for 29% of all case studies. Together with North America (10%), multiple case studies from these three continental regions account for 39% of all studies. In other words, specific municipalities from these continental regions are represented so frequently that their combined total is greater than that of the combined total for all case studies from Africa, Asia,

Central America, the Middle East and Oceania combined (35%). Likewise, the total is greater than that for the combined total of single examples (i.e. those appearing only once) from Europe, North America and South America.

The significant variation in the representation of countries is also noticeable when looking exclusively at multiple case studies. The countries named in Figure 6 account for 79% of multiple case studies and approximately 41% of all studies.

Following on from this data, Figure 7 reveals the municipalities which are most frequently represented in the case study collections, i.e. the multiples. These are all represented in the countries named in Figure 6, and it is perhaps no surprise that the three of the six most-represented municipalities are located in Brazil.

The 23 municipalities in Figure 7 account for 62% of the 154 multiple case studies, or 32% of all 298 studies. 18 of the 23 municipalities are located in Europe, North America and South America; there are no Central American, Middle Eastern or Oceanic examples.

The prominence of these municipalities may have various causes and it is possible to speculate about possible implications of these choices. It could be that these cases were or are judged, according to some criteria or purely subjective terms, to be the most relevant, successful, innovative, etc. However, other criteria may have played a role, e.g. participation in ICLEI projects, status as an ICLEI host city (Freiburg, São Paulo, Toronto), host to ICLEI World Congresses (Belo Horizonte, Cape Town, Edmonton), or other roles in ICLEI (e.g. representative in Executive Committee). As ICLEI is a membership organisation, it would be surprising if there were no such effects. Indeed, such representation is an important function of the organisation.

Municipalities of different sizes and population are represented in Figure 7. The megacities of São Paulo and Seoul and Calvià, a small town of around 50,000 inhabitants on the island of Mallorca, are obvious outliers in terms of size, although there are no smaller (i.e. village/rural) municipalities. Sixteen of the municipalities in Figure 7 have populations in the range of approximately 400,000 to 5,000,000, accounting for 72% of studies on these 23 municipalities, and 23% of all studies. (The municipalities featured in Figure 7 that are exception to this are Calvià, Freiburg, Helsingborg, São Paulo, Shimla, Seoul and Växjö). In other words, 16 municipalities account for almost one quarter of all ICLEI case studies on sustainable development at the local level. The 12 most-represented municipalities feature in 63 studies, 41% of multiples and 21% of the total collection.

6.4. Which Themes or Topics Are Represented in the Case Studies?

The data presented here should be interpreted as highly subjective, for the reasons already described. Thus, this section does not aim to present a full or "scientific" account of the data, but rather to illustrate some basic findings that may inform future research.

A number of verbs and adjectives are deployed when constructing titles. Those that appeared most frequently were synonymous with "Involving" (34), "Reducing" (19), "Promoting/encouraging" (17), "Implementing/action" (15), "Managing" (15), and "Integrated/integration" (15). 11 studies referred to "leadership/best" but only 3 mentioned "ambition". Of other categories, 3 mentioned "fighting/combating" and 3 "benefiting". The use of such words seems to imply an emphasis on participation and awareness-raising, strategic management, and actions to reduce negative impacts.

Concerning themes, energy (68) and climate change (55) featured prominently, ahead of transport (47), urban development (39), water (31), waste management (29) and environment (23). Concerning measures for each theme, studies on energy focused on renewable energy (37) or energy conservation/energy efficiency (31). Other prominent subthemes/measures included economic development (42), biodiversity (33), welfare/well-being (28), emission reduction targets (21), and mobility (16). Other topics featured less prominently, despite their past inclusion as strategic priorities of ICLEI, e.g. pollution (3) or soil (1). Themes such as disaster prevention or health, together with cultural issues such as heritage (all 1), were also less prominent.

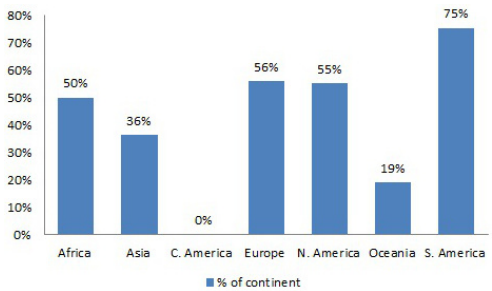

Figure 4. Multiple case studies as a proportion of continental regions.

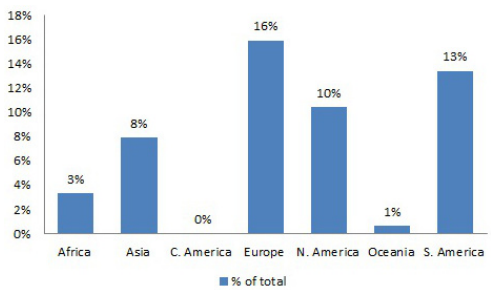

Figure 5. Multiple case studies per region as a proportion of all case studies.

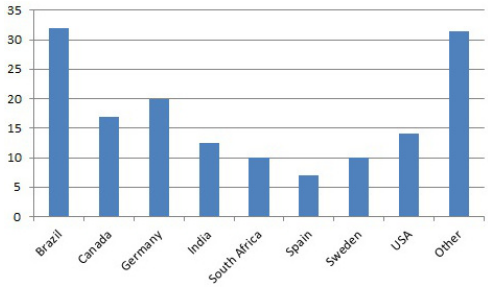

Figure 6. Most multiple case studies per country. Of the "Other" countries, the most represented countries are Colombia, Indonesia, Italy and Japan, with 4 multiple studies each.

Concerning organisation and implementation, participation (45), planning (33), management (32, or 36 including demand management), local cooperation (32), education (16), financial/cost issues (15) and municipal employees/organisations (15). Regional cooperation (8), environmental management systems (5), legal or regulatory issues (5) and international cooperation (4) are examples of issues that featured less prominently.

6.5. Focusing on the Main ICLEI Case Study Series

Removing the thematic case study collections from the data and only studying the main ICLEI Case Study series impacts upon representation, with relative increases in Asian, North American and South American shares (see Figure 8). This means the other continental regions have greater representation in the thematic collections than in the main series.

The USA (26), Brazil (23), and Germany (14) are the countries that appear most frequently in the main ICLEI Case Study series. In total, examples from 41 countries feature plus one study focusing on ICLEI (CCP campaign). The 181 case studies include 137 examples: 108 single cases and 72 multiples from 29 municipalities. The nine municipalities that appear most often are shown in Figure 9 and account for 18% of all cases in the series.

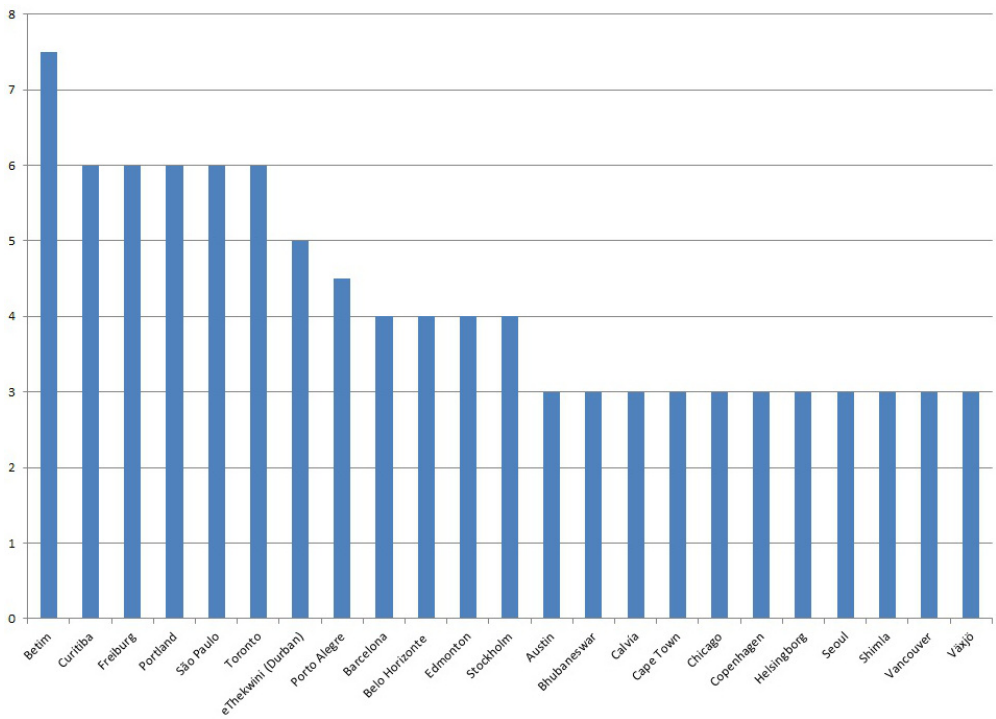

Figure 7. Most multiple case studies per municipality.

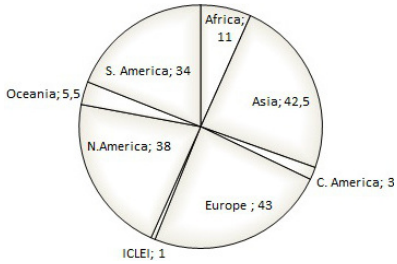

Figure 8. Number of case studies per continental region in the main series.

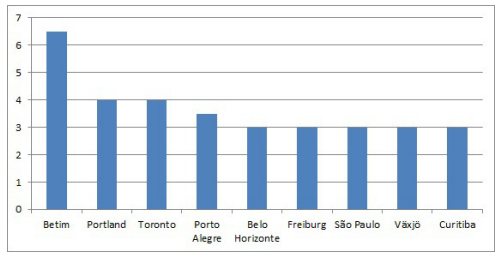

Figure 9. Eight municipalities with most case studies in the main series.

7. Discussion

The exploration of ICLEI's case study collections provides valuable insights into the patterns of representation that emerge when TMNs disseminate best practices. Moreover, by testing ICLEI's claim that the case studies presented in a 2012 report were "not the usual suspects" [28], it is possible to both substantiate and refute their claim. Seven of the case studies featured in "Showcasing progress" involved municipalities (and a national programme) that had not previously been included in the nine case study collections assessed in this study.

However, seven case studies did present examples from municipalities already featured in the nine collections. Two of these municipalities (Iida and Reykjavik) had only previously featured in one collection (Climate Roadmap), but five municipalities had featured on multiple occasions: Betim (6.5 other studies), Cape Town (2 other studies), Ethekwini (Durban), Portland, and Toronto (each 3 other studies). The last three municipalities have subsequently appeared in a total of five more studies and must therefore be considered to be very much the usual suspects. In contrast, only one (Thane, India) of the "unusual" suspects included in the 2012 report has subsequently been the subject of a new case study. This indicates that although the overall number of municipalities represented in the collections has increased, some of the "usual suspects" have consolidated their position (indeed, Belo Horizonte is the study of another case study published in 2016).

This tends to underline the validity of claims that certain kinds of municipalities appear more frequently than others in discussions on sustainable development. The author do not take the view that such imbalances arise from any particular biases or wilful distortions, but are more likely to offer insights into limitations to ICLEI's organisational resources and capacities, conditions of project financing, or lack of knowledge or information about alternative possible cases. Municipalities that have been engaged in ICLEI's work in an active way, over a long period of time, may feature more prominently.

Nonetheless, the financial resources and administrative capacity of municipalities may also play an important role in determining who are the subject of case studies. Municipalities with limited resources or capacity are unlikely to have time to invest in working collaboratively on the content of a case study. These findings indicate that TMNs such as ICLEI may need to make a more determined effort to address absences in collections, or adopt clearer criteria for case selection in order to justify presence. There are not necessarily inherent reasons why repetition of examples is problematic (indeed, such repetition may highlight progress or stagnation over time); nevertheless, there is a need to be explicit about why selections are made and disseminated.

Some authors cite unequal access to resources as a key determinant of power relationships (see e.g. [62]), but such arguments will not be explored here, as the results of this paper provide only superficial evidence for such claims. Nevertheless, the results do highlight a number of interesting points, which may support or refute different theoretical claims about the use of case studies. For example, the results suggest some degree of ethnocentrism, or at least a lack of plurality, in line with the claims made by authors such as [40–43]. This should not be interpreted as a criticism of ICLEI, as 51 countries are featured in the nine collections, and there is no inherent reason for any or all countries to be included, just as there is no clear way of evaluating which particular municipality should be considered the most appropriate for any given case study, or indeed if practices in one context may or may not be diffused to other contexts.

However, the issue is worthy of discussion. The majority of case studies in the nine collections present examples from Europe and the Americas, at the expense of other continental regions. Moreover, a lack of plurality is observed within Europe (i.e. few former-Soviet countries) and the Americas (i.e. few Central American or Caribbean countries, overwhelming emphasis on Brazil, Canada and USA). The reasons for this are unclear, perhaps reflecting resources, history, specific themes or roles within ICLEI. Similarly, Oceania appears to be a synonym for Australia (and New Zealand), and examples from vast tracts of Africa, the Middle East and Central Asia are absent from the collections. Within North America, another trend is the declining

number of case studies addressing the USA in the second period of the study (a trend masked only by a flurry of case studies issued in 2015). Again, a number of inferences may be made about this, some of which may appear oppositional e.g. an increased scepticism on the part of the USA concerning environmental issues, or an increased concern, leading to national initiatives on sustainability issues, such as that spearheaded by the US Conference of Mayors.

The population size of countries appears to play a limited role in determining the subjects of case studies. Various populous countries are not represented at all (e.g. Nigeria, Pakistan, Russia), while others (e.g. Bangladesh, China) are seldom featured. Nonetheless, frequently-represented examples tend to come from medium-large municipalities (with an interest in green branding, see e.g. [32]), with megacities and small municipalities less frequently represented. Again, it is only possible to speculate at the reasons for this, which may include resources, languages and the linguistic capacity of ICLEI staff in different continental regions, or perhaps a lack of political organisation or perceptions concerning the limited relevance of the sustainable development agenda (and lack of potential studies) in some contexts. It is also entirely possible that municipalities in some regions are active in other municipal associations or disseminate information about their work in other ways (e.g. through initiatives such as "Villes Durables" of the International Organisation of La Francophonie or equivalent networks). This does not preclude the importance of scrutinising representation in ICLEI collections, but rather emphasises the need for further research of this kind.

8. Conclusions

This paper aimed to assess the ways in which the composition of ICLEI case study collections may influence the framing of the practice and study of sustainable development in municipalities. More specifically, by identifying the patterns of representation in the collections, the paper aimed to identify whether any "usual suspects" are obvious in ICLEI's case study collections. The results of this study suggest that there is evidence of both over- and under-representation of continental regions, countries and themes in the nine international case study collections published by ICLEI. Moreover, a number of municipalities from a small number of countries emerge as "usual suspects" in the collections. This underlines the importance of theoretical claims concerning the risks of imbalances when using case studies to portray municipal work for sustainable development and the need to reflect on the implications of presence and absence in framing sustainable development.

Future research could add to understanding by deepening the study. For example, content or discourse analysis could be used to assess the actual content of case studies. An alternative variation would be to consider the membership status of case study subjects and attempt to investigate whether membership/insider status influences the selection of case study subjects. Another approach would be to widen the study and contrast the composition of ICLEI collections with similar collections published by other municipal networks, or to complement the study by contrasting the overall composition of associations' literature with that of academic literature or other interest organisations. Alternatively, a study of "invisible" or absent municipalities operating outside of TMNs could improve understanding of their actions, thereby making a significant contribution to literature on municipalities and TMNs.

In sum, this study provides insight into a core function of TMNs, the production and dissemination of information, knowledge and best practice. A significant body of literature has explored the role of TMNs in capacity-building and evaluation, as representatives of municipalities in the international system, and the case studies and practices of specific municipalities. However, to date, there has been limited discussion or quantification of the ways in which TMNs present and disseminate information and in doing so, generate representational trends that emphasise "usual suspects" and avoid discussion of others.

The case of ICLEI illustrates this point, yet a wider study including other TMNs and case study collections would perhaps result in a similar conclusion. Indeed, the presence of "usual suspects" may not necessarily be entirely negative. The point is, there is a clear need to improve our understanding of who the "usual suspects" are or are not. Such understanding would assist in understanding the appropriateness of using such cases as illustrations of different phenomena, and may well promote an increase in the diversity of examples in case studies on urban sustainability published by TMNs and scholars. Moreover, understanding the representation patterns influencing *which* municipalities and *what* topics are presented in discourses may also contribute to scientific understanding of other processes, such as the role of non-state actors in climate governance. These issues are worthy of exploration in future research.

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References and Notes

[1] Acuto M. The New Climate Leaders? Review of International Studies. 2013;39(4):835–857. doi:10.1017/S0260210512000502.

[2] Betsill M, Bulkeley H. Looking Back and Thinking Ahead: A Decade of Cities and Climate Change Research. Local Environment. 2007;12(5):447–456. doi:10.1080/13549830701659683.

[3] Kern K, Alber G. Governing Climate Change in Cities: Modes of Urban Climate Governance in Multi-level Systems. In: Competitive Cities and Climate Change, OECD Conference Proceedings. Paris, France: OECD; 2009. pp. 171–196. Available from: http://search.oecd.org/governance/regional-policy/50594939.pdf#page=172.

[4] Bulkeley H, Castán Broto V. Government by experiment? Global cities and the governing of climate change. Transactions of the Institute of British Geographers. 2013;38(3):361–375. doi:10.1111/j.1475-5661.2012.00535.x.

[5] Feldman DL. The future of environmental networks—Governance and civil society in a global context. Futures. 2012;44(9):787–796. doi:10.1016/j.futures.2012.07.007.

[6] Garzillo C, Kuhn S. Governing the multilevel transition. In: Sauer T, Elsen S, Garzillo C, editors. Cities in Transition: social innovation for Europe's urban sustainability. Abingdon, UK: Routledge; 2016. pp. 204–220.

[7] Fenton P. The role of port cities and transnational municipal networks in efforts to reduce greenhouse gas emissions on land and at sea from shipping—An assessment of the World Ports Climate Initiative. Marine Policy. 2015 (*in press*); doi:10.1016/j.marpol.2015.12.012.

[8] Bouteligier S. Inequality in new global governance arrangements: the North–South divide in transnational municipal networks. Innovation: The European Journal of Social Science Research. 2013;26(3):251–267. doi:10.1080/13511610.2013.771890.

[9] Pablo-Romero MdP, Sánchez-Braza A, Manuel González-Limón J. Covenant of Mayors: Reasons for Being an Environmentally and Energy Friendly Municipality. Review of Policy Research. 2015;32(5):576–599. doi:10.1111/ropr.12135.

[10] Fünfgeld H. Facilitating local climate change adaptation through transnational municipal networks. Current Opinion in Environmental Sustainability. 2015;12:67–73. doi:10.1016/j.cosust.2014.10.011.

[11] Niederhafner S. Comparing functions of transnational city networks in Europe and Asia. Asia Europe Journal. 2013;11(4):377–396. doi:10.1007/s10308-013-0365-3.

[12] Kern K, Bulkeley H. Cities, Europeanization and Multi-level Governance: Governing Climate Change through Transnational Municipal Networks. JCMS: Journal of Common Market Studies. 2009;47(2):309–332. doi:10.1111/j.1468-5965.2009.00806.x.

[13] Keiner M, Kim A. Transnational City Networks for Sustainability. European Planning Studies. 2007;15(10):1369–1395. doi:10.1080/09654310701550843.

[14] McCann E, Ward K. Mobile Urbanism: cities and policymaking in the global age. Minneapolis, MN, USA: University of Minnesota Press; 2011.

[15] McCann E. Policy Boosterism, Policy Mobilities, and the Extrospective City. Urban Geography. 2013;34(1):5–29. doi:10.1080/02723638.2013.778627.

[16] Baker T, Temenos C. Urban Policy Mobilities Research: Introduction to a Debate. International Journal of Urban and Regional Research. 2015;39(4):824–827. doi:10.1111/1468-2427.12252.

[17] Bulkeley H, Davies A, Evans B, Gibbs D, Kern K, Theobald K. Environmental Governance and Transnational Municipal Networks in Europe. Journal of Environmental Policy & Planning. 2003;5(3):235–254. doi:10.1080/1523908032000154179.

[18] Sauer T, Elsen S, Garzillo, C. Cities as places of a new, shared prosperity. In: Sauer T, Elsen S, Garzillo C, editors. Cities in Transition: social innovation for Europe's urban sustainability. Abingdon, UK: Routledge; 2016. pp. 239-252.

[19] Hakelberg L. Governance by Diffusion : Transnational Municipal Networks and the Spread of Local Climate Strategies in Europe. Global Environmental Politics. 2014;14(1):107–129. doi:10.1162/GLEP.

[20] Román M. Governing from the middle: The C40 Cities Leadership Group. Corporate Governance: The international journal of business in society. 2010;10(1):73–84. doi:10.1108/14720701011021120.

[21] Giest S, Howlett M. Comparative climate change governance: Lessons from european transnational municipal network management efforts. Environmental Policy and Governance. 2013;23(6):341–353. doi:10.1002/eet.1628.

[22] Dolowitz D, Keeley M, Medearis D. Stormwater management: can we learn from others? Policy Studies. 2012;33(6):501–521. doi:10.1080/01442872.2012.722289.

[23] Campbell T. Learning cities: Knowledge, capacity and competitiveness. Habitat International. 2009;33(2):195–201. doi:10.1016/j.habitatint.2008.10.012.

[24] McFarlane C. The Comparative City: Knowledge, Learning, Urbanism. International Journal of Urban and Regional Research. 2010;34(4):725–742. doi:10.1111/j.1468-2427.2010.00917.x.

[25] Robinson J. Cities in a World of Cities: The Comparative Gesture. International Journal of Urban and Regional Research. 2011;35(1):1–23. doi:10.1111/j.1468-2427.2010.00982.x.

[26] Ward K. Towards a relational comparative approach to the study of cities. Progress in Human Geography. 2010;34(4):471–487. doi:10.1177/0309132509350239.

[27] Jordan A, Huitema D. Policy innovation in a changing climate: Sources, patterns and effects. Global Environmental Change. 2014;29:387–394. doi:10.1016/j.gloenvcha.2014.09.005.

[28] Local Sustainability 2012: Showcasing progress. Bonn, Germany: ICLEI; 2012. Available from: http://local2012.iclei.org/fileadmin/files/LS2012_CASE_STUDIES_www.pdf.

[29] Jänicke M, Weidner H. Successful Environmental Policy: An Introduction. In: Jänicke M, Weidner H, editors. Successful Environmental Policy: A Critical Evaluation of 24 Cases. Berlin, Germany: Sigma; 1995. pp. 10–26.

[30] Mccann E, Ward K. Thinking Through Dualisms in Urban Policy Mobilities. International Journal of Urban and Regional Research. 2015;39(4):828–830. doi:10.1111/1468-2427.12254.

[31] Busch H. Linked for action? An analysis of transnational municipal climate networks in Germany. International Journal of Urban Sustainable Development. 2015;7(2):213–231. doi:10.1080/19463138.2015.1057144.

[32] Andersson I. Geographies of Place Branding—Researching through small and medium sized cities [PhD Thesis]. Stockholm University; 2015.

[33] Busch H, Anderberg S. Green Attraction—Transnational Municipal Climate Networks and Green City Branding. Journal of Management and Sustainability. 2015;5(4):1–16. doi:10.5539/jms.v5n4p1.

[34] Mori K, Christodoulou A. Review of sustainability indices and indicators: Towards a new City Sustainability Index (CSI). Environmental Impact Assessment Review. 2012;32(1):94–106. doi:10.1016/j.eiar.2011.06.001.

[35] Fitzgerald BG, O'Doherty T, Moles R, O'Regan B. A quantitative method for the evaluation of policies to enhance urban sustainability. Ecological Indicators. 2012;18:371–378. doi:10.1016/j.ecolind.2011.12.002.

[36] Andonova LB, Betsill MM, Bulkeley H. Transnational Climate Governance. Global Environmental Politics. 2009;9(2):52–73. doi:10.1162/glep.2009.9.2.52.

[37] Bouteligier S. Cities, Networks, and Global Environmental Governance: Spaces of Innovation, Places of Leadership. vol. 1. Abingdon, UK: Routledge; 2013.

[38] Hodson M, Marvin S. World cities and climate change: Producing urban ecological security. Maidenhead, UK: Open University Press; 2010.

[39] Ceron Castano I, Wadley D. Conceptualization and System Design in the Monitoring of Urban Form. Planning Practice and Research. 2012;27(5):495–511. doi:10.1080/02697459.2012.715818.

[40] Smith R, Wiek A. Achievements and opportunities in initiating governance for urban sustainability. Environment and Planning C: Government and Policy. 2012;30(3):429–447. doi:10.1068/c10158.

[41] Schlee MB, Tamminga KR, Tangari VR. A Method for Gauging Landscape Change as a Prelude to Urban Watershed Regeneration: The Case of the Carioca River, Rio de Janeiro. Sustainability. 2012;4(12):2054–2098. doi:10.3390/su4092054.

[42] Isendahl C, Smith ME. Sustainable agrarian urbanism: The low-density cities of the Mayas and Aztecs. Cities. 2013;31:132–143. doi:10.1016/j.cities.2012.07.012.

[43] Raco M, Lin WI. Urban sustainability, conflict management, and the geographies of postpoliticism: A case study of Taipei. Environment and Planning C: Government and Policy. 2012;30(2):191–208. doi:10.1068/c1199.

[44] Robinson J. Ordinary cities: between modernity and development. London, UK: Routledge; 2006.
[45] Smit W, Parnell S. Urban sustainability and human health: An African perspective. Current Opinion in Environmental Sustainability. 2012;4(4):443–450. doi:10.1016/j.cosust.2012.07.004.
[46] Pierre J. Comparative Urban Governance: Uncovering Complex Causalities. Urban Affairs Review. 2005;40(4):446–462. doi:10.1177/1078087404273442.
[47] Seto KC, Reenberg a, Boone CG, Fragkias M, Haase D, Langanke T, et al. Urban land teleconnections and sustainability. Proceedings of the National Academy of Sciences. 2012;109(20):7687–7692. doi:10.1073/pnas.1117622109.
[48] Cook IR, Swyngedouw E. Cities, Social Cohesion and the Environment: Towards a Future Research Agenda. Urban Studies. 2012;49(9):1959–1979. doi:10.1177/0042098012444887.
[49] Aguilar AG, Santos C. Informal settlements' needs and environmental conservation in Mexico City: An unsolved challenge for land-use policy. Land Use Policy. 2011;28(4):649–662. doi:10.1016/j.landusepol.2010.11.002.
[50] Local sustainability 2012: Taking stock and moving forward. Bonn, Germany: ICLEI; 2012.
[51] Otto-Zimmermann K. From Rio to Rio+20: The changing role of local governments in the context of current global governance. Local Environment. 2012;17(5):511–516. doi:10.1080/13549839.2012.686564.
[52] The ICLEI Story. Bonn, Germany: ICLEI. Available from: http://archive.iclei.org/index.php?id=748.
[53] ICLEI around the World. Bonn, Germany: ICLEI. Available from: http://www.iclei.org/iclei-global/iclei-around-the-world.html.
[54] Our Global and Thematic Centers. Bonn, Germany: ICLEI. Available from: http://www.iclei.org/iclei-global/our-global-thematic-centers.html.
[55] ICLEI Timeline 1990–2012. Bonn, Germany: ICLEI. Available from: http://www.iclei.org/fileadmin/user_upload/ICLEI_WS/Documents/ICLEI_Timeline.pdf.
[56] Local Action for Biodiversity. Bonn, Germany: ICLEI. Available from: http://archive.iclei.org/index.php?id=city-cases.
[57] ICLEI Publications. Bonn, Germany: ICLEI. Available from: http://archive.iclei.org/index.php?id=publications.
[58] Case Studies. Bonn, Germany: ICLEI. Available from: http://www.iclei.org/activities/resources/publications/iclei-case-studies.html.
[59] Switch Training Desk. Bonn, Germany: ICLEI; 2007. Available from: www.switchtraining.eu/case-studies/.
[60] Baker S, Eckerberg K. Governance for Sustainable Development in Sweden: The Experience of the Local Investment Programme. Local Environment. 2007;12(781058477):325–342. doi:10.1080/13549830701412455.
[61] Wollmann H. Comparing local government reforms in England, Sweden, France and Germany; 2008. Available from: www.wuestenrot-stiftung.de/download/local-government.
[62] Mol APJ. China's ascent and Africa's environment. Global Environmental Change. 2011;21(3):785–794. doi:10.1016/j.gloenvcha.2011.03.015.

Article IV

Shaping Local Response – The Influence of Transnational Municipal Climate Networks on Urban Climate Governance

Henner Busch (Lund University), Lena Bendlin (Freie Universität Berlin), Paul Fenton (Linköping University)

Abstract

In recent years, many cities have joined transnational municipal climate networks (TMCNs), which were set up in response to climate change. Despite the fact that some of these TMCNs have been active for more than two decades, there has been no systematic investigation of the networks' impact on local climate governance. In this article we attempt to answer if and how local climate governance has been influenced by municipalities' memberships in TMCNs. Our assessment is based on an online survey conducted with staff from all German cities above 50,000 inhabitants with membership in TMCNs, fieldwork and interviews in seven German cities. Network membership mainly influences local climate governance through the following processes: (1) ***Enabling internal mobilisation*** (2) ***Formulating emission reduction goals*** (3) ***Institutionalising Climate Trajectories*** (4) ***Enabling direct exchange*** and (5) ***Offering project support***. Our data suggests that the main influences of TMCN membership unfold in internal political processes in the member cities. External interactions, such as between cities or between network staff and cities is comparably less important. We also found that many of these benefits can be associated with laggards rather than pioneering cities. We conclude that TMCNs have considerable influence on local climate governance in Germany.

Keywords: transnational municipal climate networks, urban planning, local climate governance, climate change mitigation, climate change adaptation

1. Introduction

World-wide, the implementation of climate change policies for mitigation and adaptation is increasingly becoming a task for local governance. Cities offer great potential for climate change mitigation measures since they represent concentrations of flows of physical materials (Anderberg 2012) and carbon (Bulkeley et al. 2013) . In the face of increasing numbers of climate change induced threats (Pachauri et al. 2014), questions of adaptation have also entered the urban climate agenda (Wamsler 2014). Consequently, there has been increasing demand for more or improved climate governance, which has been addressed through a range of approaches and initiatives: e.g. national programmes, regional cooperation, public-private partnerships and engaging communities (Bulkeley & Newell 2015).

In this context, several transnational municipal climate networks (TMCNs) have been established in recent decades. These are networks of local governments that voluntarily come together to improve climate governance (Kern & Bulkeley 2009). Some focus on either mitigation or adaptation; others combine these two interrelated topics (Busch 2015). TMCNs have gained growing attention in the 2000s with an increasing number of publications focussing on their functions within and impact on multilevel climate governance (Bulkeley et al. 2003; Davies 2005; e.g. Bulkeley & Kern 2006; Toly 2008). However, investigations assessing how TMCN memberships influence local climate policies and governance are scarce (e.g. Davies 2005; Zeppel 2012; Hakelberg 2014).

The aim of this article is to address this gap by identifying and assessing the major impacts of TMCN membership on local climate governance in a coherent and systematic manner. With this article we aim to increase the understanding of the impacts of TCMNs in academia as well as providing ideas to practitioners as how they can improve their work. We focus on the local level of urban climate governance.

Our inquiry builds on empirical data from Germany. Germany is the country within the European Union (EU) with the largest population and the largest economy, and a country where membership in TMCNs is very widespread (Busch 2015). 136 out of 183 German cities with more than 50,000 inhabitants are members of at least one TMCN. Simultaneously, Germany has considerably reduced its greenhouse gas (GHG) emissions and has initiated an ambitious transition of its energy system: the *Energiewende* (Gawel et al. 2014; Strunz 2014). Many cities have played an active part in this process through local measures such as local building codes (Kronsell 2013) or supporting renewable energy projects through local power suppliers (Busch & McCormick 2014). Due to these factors, Germany can serve as a critical case from which we can learn about the role of TMCNs in local climate governance.

We attempt to answer the following overarching research question:

Which impacts do TMCNs have on municipal urban climate governance?

We operationalise this question by posing and answering the following sub-research questions:

Which aspects of local climate governance are influenced by membership in TMCNs?

How does this impact occur?

What local conditions enable or hinder TMCN membership so as to have an impact on local climate governance?

"Impact" is here defined as *a modification of urban climate governance which can be traced back to any aspect of TMCN membership*.

This introduction is followed by a brief overview of the most important TMCNs, and the scientific literature on TMCNs and the historical development of TMCNs. Thereafter, we present previous theoretical frameworks and studies on local impacts of TMCNs. In the methodology section we present our approach, methods and data. In next the following sections, we present and discuss our results, before we conclude by summarising our findings, placing them in the wider context of research on TMCNs and suggesting further trajectories of research on this topic.

2. TMCNs: History and conceptual underpinnings

An overview of the TMCNs that we focussed on in in this research is presented in **Table 1**. The two most important networks in Germany Climate Alliance and the Covenant of Mayors are intertwined in several ways. Climate Alliance is part of the consortium running the Covenant of Mayors on behalf of the European Commission. The networks hold conferences jointly, e.g. the European conference of Climate Alliance 2013 in The Hague was at the same time used as assembly for members of the Covenant of Mayors. Several staff members are employed by both networks simultaneously. In addition, Climate Alliance and the Covenant of Mayors share the same address for their Brussels offices (Busch 2015).

Table 1 TMCNs active in Germany

Network	Focus	Members	Members in Germany	German members above 50,000 inhabitants
Mayors Adapt	Adaptation	137	11	10
Covenant of Mayors	Mitigation	5954	57	40
Climate Alliance (only full individual members)	Mitigation and Adaptation	1440	472	127
C40	Mitigation and Adaptation	80	2	2
Energy Cities (only full individual members)	Mitigation	171	8	6
Future Cities	Adaptation	8	2	1
Cities for Climate Protection Europe (ICLEI Programme)	Mitigation and Adaptation	176	11	9
World Mayors Council on Climate Change	Mitigation and Adaptation	131	1	1
UNISDR Resilient Cities	Adaptation	2827	1	1

Source: Adjusted from Busch (2015). Numbers updated Nov. 2015

In recent years, an increasing number of articles and book chapters which investigate TMCNs and their role in climate governance have been published. Political scientists and geographers dominate but there are also examples of interdisciplinary cooperation contributing to the development of theoretical frameworks, which describe the roles and functions of TMCNs. Below, we start by presenting some theoretical frameworks, which are aimed at understanding TMCNs' impact on climate governance. This is followed by a short overview of empirically-based assessments of TMCN impacts on local climate governance.

2.1 Theoretical Frameworks describing the impacts of TMCNs

One of the earliest efforts to conceptualise TMCN impacts (Bulkeley et al. 2003) identified four ways in which climate governance is affected: through a) knowledge dissemination, b) lobbying higher levels of the multilevel governance system, c) acting as implementing agencies for European policies and d) by creating and promoting policy initiatives throughout the multilevel governance system

Andonova et al. (2009) suggested a model based on three main roles through which TMCNs can use "soft" governance instruments to influence European climate governance. The three roles are: a) information-sharing, b) capacity building and c) rule setting. These roles are not mutually exclusive and some networks combine different roles while others do not (Bulkeley & Newell 2015).

A model which distinguishes four functions of TMCNs has been presented by Busch (2015). These four functions are networks a) as consultants, b) as advocates of municipalities, c) as platforms for municipalities and d) as commitment brokers of voluntary commitments. Table 2 serves as an overview for the different functions that are included in these frameworks. The order in which the functions are presented has been adopted to show similarities between the frameworks. All three frameworks share a function which refers to the horizontal flow of information (1). A function focussing on the implementation of policies is covered in row 2. The functions in the 3rd row all somewhat reflect the initiation of rules and the members' compliance with them. Finally, two out of three frameworks include the influence of TMCNs on higher levels of government such as national governments or the EU (4).

Table 2

Overview of networks' roles and functions, adopted from Fenton & Busch (Fenton & Busch 2016)

Framework \ Function	Bulkeley et al (2003)	Andonova et al (2009)	Busch (2015)
1 (horizontal flow of information)	Knowledge dissemination	Information sharing	Platform for members
2 (implementation of policies)	Implementation of EU policies	Capacity building & implementation	Consultancy
3 (rules& commitment)	Policy initiation	Rule setting	Commitment brokering
4 (Lobbying)	Lobbying		Advocacy and lobbying

All the roles and functions defined in these frameworks can be a useful basis for a theoretical discussion of TMCN impacts. However, for assessing the impacts of TMCNs on local climate governance an empirical investigation with substantial data is needed.

2.2 Assessments of Local Impacts

Despite the emergence of theoretical frameworks for understanding the functions of TMCNs, most studies remain on an abstract level and actual assessments of TMCNs impact on local climate governance are scarce. Several empirically-based studies come to the conclusion that the impact of TMCNs membership and functions on local emissions is not significant or impossible to measure (Davies 2005; Fay 2007; Bulkeley & Newell 2015). Other studies come to the opposite conclusion: Zeppel finds that one of the TMCNs, namely the CCP, has "played a significant role in urban climate programmes" in Australia (Zeppel 2013, p. 226). Hakelberg (2014) concludes that TMCNs have "clearly promoted the spread of local climate strategies among European cities between 1992 and 2009" (p. 123).

Betsill and Bulkeley (2004) find that the CCP attracts active members not because it is serving as a knowledge platform but rather due to the access it offers to financial and political resources, as well as enhancing the legitimacy of climate protection. A study on the impacts of TMCNs in Ireland found that municipalities mostly perceive the TMCNs' role of disseminating information as being the most important (Davies 2005), and Toly (2008) finds that the two most important functions of TMCNs are inter-municipal dialogue and the pooling of global influence.

It remains unclear which member cities are actually influenced by membership in a TMCN. The local impact of TMCNs are of course likely to differ depending on the degree to which cities engage with TMCNs. But according to Kern and Bulkeley (2009 p.329), TMCNs are mostly networks of "pioneers for pioneers". This might be the case for networks which explicitly aim to gather leading cities like the C40 network. However, since Kern's and Bulkeley's study, the Covenant of Mayors (founded in 2008) was launched in Europe. This network has a constantly increasing number of members (currently 6738) and would seem to be a network of more than only "pioneers." The Covenant, just like Climate Alliance, is a network which attracts many small municipalities, seemingly being attractive for municipalities that could rather be characterized as being laggards. We argue, therefore, that the assessment of TMCNs as networks for and by pioneers must be revaluated in light of the development of the last years.

Three preliminary observations can be made on the basis of existing literature on TMCNs. The first is that TMCNs at least have the potential to have an impact on local climate policy (Busch 2015). Secondly, the impact of TMCNs has been identified to take on different shapes in differing research approaches within the literature. And thirdly, recent and ongoing developments and changes within the network landscape have not yet been taken into consideration.

What all earlier studies have in common is that either a) they are several years old and thus potentially outdated; b) they are based on a few case studies, often of high performers and not a systematic investigation of a bigger population (e.g. Oppowa 2015); or they are c) only focussing on one specific aspect of TMCN governance, e.g. the link between TMCN membership and the development of local climate strategies (e.g. Hakelberg 2014); or d) focus on the work of the networks' staff and not on the member municipalities (e.g. Van Egmond 2011). An up-to-date analysis of TMCNs impact on local climate governance is missing. We address this gap through the following research strategy.

3. Research strategy

In the face of the presented diverse and even contradicting results, we decided to approach the research question in an explorative manner. Our approach consisted of: an online survey, interviews, field visits, analyses of relevant documents and homepages and observations at network conferences.

We deliberately refrained from using any of the presented frameworks and instead we applied an inductive approach for the data analysis to not miss any impacts. Through an iterative process of data analysis, our identified impacts emerged that were then compared to roles and functions of named frameworks.

3.1 Data Collection

The potential respondents of the survey were sampled as follows: we first identified all German cities with more than 50,000 inhabitants that are a member of at least one of the TMCNs (see table 1) active in Germany (n=136). We then searched the homepages of these cities to identify personnel or departments concerned with climate policies and contacted them via email to identify the staff members responsible for liaison with TMCNs, if any. A link to the online survey was sent to the relevant staff members that we identified, once they had agreed to take part in the survey. The survey included general questions about the city, more specific questions about climate policies (mitigation and adaptation) and the impact of TMCNs on local climate governance. We received 61 responses, corresponding to a 45% response rate but single questions had a lower response rate.

Field visits were made to four cities (Bielefeld, Bonn, Hannover and Frankfurt am Main), which had been identified through the survey as well performing cities by their peers. Additionally, we drew from three field visits to German cities (Heidelberg, Mannheim und Stuttgart) which had been conducted in an earlier research project. These cities had been identified as particularly active in their respective regional municipal associations. In all these cities we conducted interviews and made observations. For additional information we analysed material disseminated by cities and TMCNs, mostly consisting of webpages. Finally, we attended three TMCN conferences where we made observations and spoke to city delegates and staff of TMCNs. The conference visits were particularly valuable as they enabled us to observe and speak to potential future informants and to gain insights into what topics they prioritise when directly interacting with partners in the networks.

3.2 Data Analysis

The analysis of our empirical data was guided by an inductive approach to the data. We started with analysing the results from the survey. The survey comprised of different kinds of questions, such as open questions or multiple choice questions. Accordingly, the analyses of these data relied on different methods: Open answers were collected and grouped according to either predefined

categories or categories that emerged through selective coding in an inductive approach (Bryman 2008). We then compared our categories with the frameworks presented above. After developing the new categorisation of impacts, we turned to our qualitative data to find explanations for the observed impacts and to answer further questions which were spurred by reviewing the results from the survey. For this we analysed our interviews with staff from German cities and TMCNs. Finally, we complemented the analysis with data from observations at TMCN conferences.

3.3 Limitations

One limitation of our analysis is that we cannot differentiate which TMCN brings about what kind of impact. The reason for this is that many German cities are members of more than one network simultaneously. Of the 136 cities considered as potential respondents, 37 were members of more than one TMCN. At the same time the survey was conducted in a way that ensured anonymity of our respondents. Our data is dominated by members of Climate Alliance: only 5 of the 136 cities are not members of Climate Alliance, reflecting the wide proliferation of this network in Germany. Climate Alliance was founded in Frankfurt in 1990 and has since then been dominated by municipalities from German-speaking countries. 36 cities of the 136 cities are member of the Covenant of Mayors.

The size of the population (136, response rate of 45%) does not allow for any sophisticated statistical analysis of our data. Therefore, we only present simple correlations as indicators for trends.

4. Functions of TMCNs

‘Which aspects of local climate governance are influenced by membership in TMCNs?’

32 of the survey respondents reported that the membership in TMCNs has had an impact on the content of local climate work. 5 did not answer the question. 9 reported that they do not know about such an impact, whereas 15 reported that TMCNs have not influenced the content of the local climate work. An open question “How does TMCN membership influence local climate governance?” was posed in the survey to identify the fields of local climate governance that our respondents deemed most influenced by TMCN membership. The respondents were here instructed to name the four most important factors starting with the most important. 31 of our 61 respondents answered the question, but some supplied less than four factors. All in all, 101 factors were named by our respondents. We coded these responses according to selective coding to develop the categories for the different influences of TMCN membership on local climate governance.

Table 3 TMCN functions

Category (process occurring through TMCN membership)	Occurrence
Enabling internal mobilisation	17
Formulating emission reduction goals	14
Institutionalising climate trajectories	14
Enabling direct exchange	14
Offering project support	14
Exchange of best practice	5
Helping with greenhouse gas accounting	5
Referring to a global context	3
Enabling access to funding	3
Advocacy and lobbying	1
Enabling green city branding	1

Through our analysis we identified five main categories:

1. The category that most often occurred was ***enabling internal mobilisation***. Internal mobilisation encompasses awareness-raising in local politics and the local population and thereby constitutes a means of "soft" governance within the respective municipality. For example, respondents reported that through joining a TMCN the topic climate change mitigation had made it to the local political agenda. Participation in network activities can also be used as proof for a successful climate work of the environmental departments. In addition, the TMCN membership was used as a political argument to justify climate policies.
2. The second most important category was ***formulating emission reduction goals***. Many networks require their members to commit to ***formulating emission reduction goals***. This helps proponents of stronger climate policies in municipalities by assigning a certain authority to emission reduction goals. For example, upon joining the Covenant of Mayors, municipalities pledge to deliver Sustainable Energy Action Plans (SEAP) that have to at least meet the EU goal of 20% CO_2 emission reduction by 2020. And members of Climate Alliance committed to cutting CO_2 emission by 10% every 5 years and to halve per head emissions by 2030 (1990 base year). Besides such commitments TMCNs support their members in formulating emission goals by enabling benchmarking.
3. The third category, which we named ***institutionalising climate trajectories,*** describes how actors in cities can use TMCN membership to create a kind of lock-in that sets the frame for local climate governance. It encompasses answers that reflect the "institutionalised" counterpart of the ***internal mobilisation*** category. It refers to the integration of climate change policies into local institutions. These can be binding documents of municipal decision making bodies, but also the institutionalisation of climate change policies into local administrative structures, e.g. in the form of new positions for climate managers that are being justified through TMCN membership. ***Institutionalising climate trajectories*** reflects the

efforts of individuals or groups within the municipality to perpetuate climate-friendly politics and to limit the scope for local decisions that are harmful to the climate.

4. The fourth category is ***enabling direct exchange***. Direct exchange influences climate policies in a threefold way: firstly, it refers to the direct exchange of ideas between cities. Secondly, it refers to the networking of the municipality staff to initiate regional or international cooperation with other municipalities. Thirdly, it refers to an important aspect that has so far not been taken up by the scientific literature. For many staff members it is important to have a regular exchange with people in a similar position and who fight similar battles in their municipality. The exchange at network events invokes a sense of working together towards a common goal. This motivational boost becomes particularly visible at network conferences where this common cause and a sense of companionship are stressed by many speakers. While this category was as frequent as the ***formulating emission reduction goals*** or ***institutionalising climate trajectories*** categories it has seldom been mentioned the most important of the four influencing factors by our respondents.
5. ***Offering project support*** encompasses all the help the networks' infrastructure and administration provides for the implementation of concrete activities. This comes e.g. in the form of ready-to-use project ideas or competitions within the network such as Climate Alliance's *Stadtradeln*, a bike competition amongst German members. Networks not only provide ideas and material for these projects, their staff is also available for helping with the implementation.

There were also several additional but less frequent categories in the answers:

6. *Exchange of best practice* examples which were promoted by the networks' own information systems (e.g. homepages, conference presentations, newsletters);
7. *Helping with greenhouse gas accounting:* TMCNs help municipalities to generate knowledge of local emissions by providing methodologies such as GHG accounting software. The resulting emission data can then be used to identify intervention points for local climate policies. ***Offering project support*** and *greenhouse gas accounting* can both be framed as consultancy services which are provided by the networks. However, we decided against grouping these two services together because they constitute very different services from the point of view of municipalities. While ***accessing project support*** helps with the implementation of concrete measures to cut emissions or adapt to climate change, *greenhouse gas accounting* builds a knowledge base for a municipality to quantify and measure GHGs.
8. TMCNs influence local climate policies by *referring to a global context* by providing information on international climate policy. In this context, one respondent referred to Climate Alliance's partnership with the indigenous people of the Amazonian rainforest. But

networks also provide information on global policy processes such as documentation of COP negotiations on social media.

9. *Enabling access to funding:* TMCNs do not provide funding themselves, so this category refers to the networks providing access to funding by other entities. For example, the Climate Alliance hosts workshops at their international conferences where staff from member cities learns how to best file applications for EU funding schemes
10. One respondent named the work the networks are doing in the context of *advocacy and lobbying* as an important factor influencing local climate policies. This is related to the work networks do to influence the climate policies on higher levels such as the national or the international level to create favourable conditions for local climate work. This point is reflected in several of the frameworks described above.
11. TMCNs offer opportunities to advertise the city through *enabling green city branding* activities. TMCNs offer their members a number of channels such as newsletters, press releases, space on homepages, conferences and printed material to highlight cities' efforts. This final category does not refer to a direct influence of local climate governance but a side aspect of it. We included it in this list as many TMCN name branding or branding related activities as a benefit for members.

A further 11 answers could not be placed in any category as they named fields of climate policy (e.g. "climate change adaptation" or "green public procurement") and not processes or mechanisms in which the network membership influenced local policies and governance.

5. How does TMCNs membership influence the municipalities?

TMCNs have developed a number of channels for communicating with their members as well as facilitating communication between members. These channels include newsletters, leaflets and network conferences. In addition, TMCNs offer consultancy services in the form of individual "TMCN to member support" or through tools and activities. All these channels influence the members' climate work and enable some of the categorized impacts above. However, our survey results actually indicate that the main impacts of TMCNs on local climate governance occur independently of these channels.

The three most frequent categories of impact were ***internal mobilisation***, ***formulating emission reduction goals*** and ***institutionalising climate trajectories***. While interaction between TMCNs and cities or amongst cities can support these internal processes, they are first and foremost the result of local political processes. Although the continuous input from the networks does not seem to be

necessary for these internal governance processes, climate managers still link them to their cities' TMCN membership. This also means that acquiring TMCN membership might have an impact on climate governance even in cities which can be characterised as "dormant" within the network because they do not take part in conferences or other network activities. The fourth most important category, ***direct exchange***, reflects communication and cooperation between the members of TMCNs. Only the fifth most important category, ***project support***, refers to the direct flow of information from TMCNs to members.

In the survey we directly asked the respondents if and how local climate governance was influenced by the ***direct exchange*** with other network members. Of 55 respondents who answered the question, 35 stated that the local climate work had been influenced by the ***direct exchange*** with other members. 13 saw no influence and 7 were uncertain. We asked the respondents to describe this influence and categorised the replies into three mechanisms to see if any of them could be provided by direct exchange between TMCNs and members. 16 respondents stated that ***direct exchange*** with other members brings "new ideas" to the city administration, while 15 respondents stated that it was possible to be able to draw on other members' expertise. An additional 8 named "synergies" in the form of joint projects or shared costs for the analyses of the potential for the generation of renewable energies. ***Direct exchange*** has also shown to be important by observations made on network conferences. In several presentations, speeches and discussions during conferences climate managers stressed that these network meetings had a very important motivational effect. Many climate managers feel that they are faced with a constant struggle with other departments in their own municipality. Attending the conferences works as a motivational boost, because ideals and values are shared with other delegates and they are reinforced through invoking a positive spirit during the meetings. Consequently, the network conferences were named as the most important channel for our respondents to learn about other cities' climate work (35 out of 41 stated that they had learned about other cities' efforts).

These results lead us to the understanding that TMCNs play an important role in internal decision making processes within member municipalities. Betsill and Bulkeley describe this role for the CCP as a "legitimacy tool" for local governments. They argue that the membership in CCP was used to confer "*particular norms about climate protection*" (Betsill & Bulkeley 2004 p. 471). At the same time, many functions identified by former frameworks (see 3.1) like "access to funding", "green city branding" or "advocacy" which focus more on the interplay of municipalities and external actors, are less important.

Our data reveals that for several of the main impacts to unfold, the act of joining and the status of remaining a member are more important than a continuous involvement in network activities. The initial commitment to cut emissions that is made by municipalities upon joining TMCNs often serves

as the basis for an ongoing commitment to emission reduction goals. One of our informants, a former staff member of Climate Alliance, explained: "*the proponents of more ambitious climate policies in the municipality often argue: 'we signed this, so now we have to live up to it'*". This quote reveals an additional aspect of cities' work with municipalities: local actors within the municipality are required for the membership to have an impact. The act of joining is not sufficient.

A surprising result was that both *advocacy and lobbying* as well as conscious *green city branding* did not play a major role in the cities' work with TMCNs (both were only named once in our survey). The impact of *advocacy and lobbying* by TMCNs on higher levels of governance such as the nation states or the EU has been emphasised as one of the most important functions of these networks by many authors (e.g. Oppowa 2015). Consequently, it has been one of the main functions in previous conceptualisations of TMCNs (cf. Bulkeley et al. 2003; Busch 2015). Oppowa (2015) finds in connection with a study on TMCN impacts that lobbying constitutes the most important function of TMCNs, however, his assessment is mainly based on data collected directly from network staff and a few major German cities. Networks themselves stress the aspect of *advocacy and lobbying* when describing their work. One explanation for the discrepancy between our results and the perception of other researchers and the network staff is the level of analysis. A more systemic approach to the role of TMCNs within European climate governance will of course emphasise the question of lobbying more than our approach which explicitly focusses on local impacts as perceived by municipal staff. It is still remarkable that the impact of *advocacy and lobbying* by TMCNs seems rather irrelevant or not visible to actors on the local level.

The second unexpected result came in the marginal role which was assigned to *green city branding* on the municipal level. Networks offer multiple channels and opportunities (newsletters, homepages, conferences) for cities to market their climate change policies and sustainability achievements. This finding, however, is in line with a more focused analysis of this issue by Busch and Anderberg (2015) who find that German cities barely use their membership in TMCNs for green city branding.

8 of the 136 cities we contacted in the context of our survey reported that they either a) are overworked and have no time for surveys or b) do not actively work with TMCNs. This shows that TMCN membership does not only affect the local climate work positively. The fact that the work with TMCNs binds resources of municipalities is an aspect that often is overlooked in the literature. Municipalities can only utilise the opportunities for exchange and cooperation TMCNs offer if time and funds are directed at the TMCN work. Some networks such as the Covenant of Mayors demand regular emission reports of their members. These reports can become a cumbersome task especially if, according to one of our interviewees, the municipality has to do similar reporting for several networks or initiatives. An example is the European Energy Award (eea), which uses a different methodology to measure similar things to the SEAP of the Covenant of Mayors. This double reporting binds

resources which could otherwise be used to implement actual improvements and projects in the city and it can lead to "mainstreaming overload" (Wamsler 2015 p.13). In face of this extra workload, it is not surprising that a number of cities take a rather passive role in the work with the TMCNs they are members of.

6. Who benefits from what?

In the context of TMCNs the literature often divides member cities into two groups: laggards and pioneers. Laggards are underperforming in comparison to a certain group, say members of a TMCN, whereas pioneers are spearheading the field of climate governance. In the past, TCMNs have mostly been seen as networks which are beneficial for pioneers (Kern & Bulkeley 2009). And due to their soft government mechanisms (Andonova et al. 2009), they only have limited influence over laggards (Hakelberg 2014). While these laggards fail to live up to their commitments they can, according to Hakelberg, still use their TMCN membership *"as a publicly visible signal for climate-related activity"* (Hakelberg 2011 p.123).

However, all of the three most frequent impact categories (***internal mobilisation***, ***formulating emission reduction goals*** and ***institutionalising climate trajectories***) rather concern laggard than pioneer cities. Well-established climate pioneers can rely on their many years of successful climate policies and are not dependent on employing their membership in TMCNs to mobilise citizens or local companies. The same applies to emission reduction goals. Pioneers are spearheading the trend and have probably already formulated and adopted all reduction goals TMCNs suggest. One respondent from a city which had been identified as well-performing through the survey reported that the different emission commitments along with the differing reporting tools of TMCNs actually produce additional work. Finally, a long standing history in successful climate work and a ***institutionalising climate trajectories*** tend to go hand in hand. Based on these considerations, we argue that the assessment that TMCNs are mostly beneficial for pioneers is not confirmed and should thus be revaluated.

In contrast to the first three categories, ***direct exchange*** poses an attractive opportunity for both pioneers and laggards. While laggards can learn from municipality staff with more experience in implementing climate policies, pioneers can reach beyond the municipal borders and implement more ambitious projects through cooperation. However, as pointed out above, the aspect of *green city branding* through TMCNs does not play an important role for German cities (Busch & Anderberg 2015). Like ***direct exchange***, the impact of ***project support*** is something both laggards and pioneers

can benefit from. Our respondents stressed that it is very convenient for staff in municipalities if ready-made projects can be implemented easily.

Table 4 Impact of TMCN Functions

Category (process occurring through TMCN membership)	**Function more relevant for laggards or pioneers**
Enabling internal mobilisation	Laggards
Formulating emission reduction goals	Laggards
Institutionalising climate trajectories	Laggards
Enabling direct exchange	Laggards & Pioneers
Offering project support	Laggards & Pioneers
Exchange of best practice	Laggards & Pioneers
Helping with greenhouse gas accounting	Laggards
Referring to a global context	Laggards & Pioneers
Enabling access to funding	Laggards & Pioneers
Advocacy and lobbying	Pioneers
Enabling green city branding	Pioneers

7. Where is the agency?

Our findings do not confirm the assessment of former research which described TMCNs as networks by pioneers for pioneers (Kern & Bulkeley 2009; Hakelberg 2014). One explanation for this discrepancy is the development of the TMCNs and their members in recent years. Hakelberg's analysis e.g. is based on data from 2009 and earlier and thus is no longer fully valid. Since then the Covenant of Mayors (founded in 2008) has attracted many small municipalities. At the same time new networks have emerged, like the UNISDR Resilient City (founded in 2010) or the Mayors Adapt (founded in 2014). These two networks also reflect the trend that climate change adaptation has increasingly entered the agenda of local climate governance (cf. Wamsler 2015). While smaller municipalities and cities might be hesitant to contribute to mitigation efforts due to their limited impact on this issue, they have to provide adaptation measure just like bigger cities as they will be hit by climate change induced disasters just like big cities.

While the scene of TMCNs has certainly changed in recent years, the presented frameworks from earlier studies (see 3.1) suggest another explanation. The role of TMCNs in internal political processes in cities has not received much attention in former research. Instead the scale of the analysis was chosen so that the networks as separate entities with their roles and functions were investigated and not the processes in member cities. This also raises an important question about where, in the complex interactions related to TMCNs, agency is located. Former research on TMCNs dominantly treated cities as internally homogenous actors. The division into laggards and pioneers is an example

for this approach by which a city is treated like a single actor with a coherent agenda. Operationalisation of cities is beneficial for comparability, especially when dealing with a group of cities. However, this approach reduces the social and political complexity of internal processes within cities, which in turn leads to a "blind-eye" for the mechanisms and processes which dominated our data. Our approach which focussed on the cities' climate managers as main actors revealed that networks can be an important tool for internal processes in the member cities.

A recurrent theme during our interviews was the importance our informants assigned to single actors within the city. In most cases these were staff members in the municipal environmental or planning departments or local politicians who had pushed the issue of climate change onto the local agenda and who had over many years directed great efforts into local climate governance. These actors, their actions and the internal use of TMCNs in local politics were not the focus of previous research, which instead took the TMCN and not the member cities as point of departure.

8. Conclusions

TMCNs are wide-spread in Germany, especially amongst bigger cities. However, they differ greatly in number of members. At the same time staff in German cities which are members of one or more TMCNs dominantly report that the networks have influenced the cities' governance, policies and measures which address climate change. Not surprisingly, this impact was stronger in the field of climate change mitigation than adaptation. Mitigation has been on the agenda of TMCNs for up to 25 years while adaptation only entered the scene in recent years. Correspondingly, our survey showed that considerably more cities have a strategy for climate change mitigation than for climate change adaptation.

Our analysis showed that staff in cities mostly uses TMCNs for internal political purposes for ***internal mobilisation***, ***formulating emission reduction goals*** and ***institutionalising climate trajectories***. This means that the act of joining and the fact of being a member are perceived as more important than services which are actively provided by the networks' own staff and infrastructure. It also means that actors in cities that can be characterised as "dormant" members of the network can still use the membership to positively influence local climate governance. Other network functions such as offering opportunities for city branding did not come up to the same degree. This is to some degree surprising as the networks themselves stress these functions when describing their own roles and functions.

Our data further shows that staff in municipalities see the main impact of TMCN membership in functions that would rather be associated with the needs of laggards than pioneering cities (***internal mobilisation***, ***formulating emission reduction goals*** and ***institutionalising climate trajectories***). In face of these findings, former assessments of TMCNs as networks for and by pioneers do not seem to hold true any longer. It can be questioned if this is due to an evolvement of TMCNs or a different focus we chose for this research. Irrespective of the reason, our results have confirmed us in the conviction that any assessment of TMCN impact on local climate governance needs to adopt the local level as its starting point.

Furthermore, staff in German cities does not evaluate the function of *advocacy* by TMCNs as an important impact on the local climate work. In contrast, many TMCNs see *advocacy* as a very important aspect of their work (Oppowa 2015). For the staff of TMCNs, it could be important to investigate the discrepancy between the perception of *advocacy* by members and by the TMCN staff themselves. However, this finding is consistent with our finding that actors in cities use the membership in TMCNs mostly for internal political reasons, while interactions with other actors on different administrative levels are not of upmost importance.

During the course of conducting the research for this article a number of new questions and issues arose which are crucial for exploration in future research. As indicated, our methodology was limited in that we were unable to assign a specific impact to a certain TMCN. Future research could thus look into the question of which impacts are particularly strong in municipalities that are a member of different TMCNs, so that local impacts can be assigned to certain TMCNs. While our study mostly sheds light on the impact of TMCNs on climate policies in cities, future research could focus on the impact of TMCNs on rural and in particular small municipalities. It would also be interesting to investigate how municipalities, which - due to the size of their administration - have limited resources, can develop strategies to tap into the potential TMCNs offer. This focus is particularly interesting in the context of Southern Europe where many small municipalities have joined the Covenant of Mayors.

We conclude that TMCN membership plays an important role in internal decision making processes in municipalities. We therefore suggest that future research should, most of all, focus on exactly these internal processes. Research in the past has focussed too much on the wrong levels of governance (the networks as such or European climate governance). Thus, the most important aspect of TMCNs impact, namely the internal use of TMCN membership, was systematically neglected. An approach which focusses on these internal processes could for example draw from theories on policy entrepreneurs.

Apart from the scientific contribution our research can also inform staff from networks and city administration. Network staff can use our findings to underline the positive impacts TMCN

membership brings about. In particular TMCNs should reconsider how advocacy and lobbying efforts are presented to network members. Our findings suggest that despite the fact that TMCNs communicate their activities in this field actively, climate managers in German cities seem unable to link these efforts to actual impacts on the ground. It might help actors in cities to clearly understand how lobbying translates into tangible benefits in their daily work. Finally, staff in networks might find it encouraging knowing that TMCN membership has the potential to unfold positive effects on local climate governance even in cities which seem to be "dormant" due to their low involvement in continuous network activities.

Finally, it might be an important finding for actors in cities that TMCNs can positively impact the local climate governance in all kinds of cities, irrespective of where they are in their development. TMCN membership offers benefits for laggards and pioneers alike.

Bibliography

Anderberg S. 2012. Natural Resource Flows and Sustainability in Urban Areas. In: Encycl Sustain Sci. [place unknown]; p. 6853–6864.

Andonova LB, Betsill MM, Bulkeley H. 2009. Transnational Climate Governance. Glob Environ Polit [Internet]. 9:52–73. Available from: http://www.mitpressjournals.org/doi/abs/10.1162/glep.2009.9.2.52

Betsill M, Bulkeley H. 2004. Transnational networks and global environmental governance: The cities for climate protection program. Int Stud Q [Internet]. [cited 2013 Sep 3]:471–493. Available from: http://onlinelibrary.wiley.com/doi/10.1111/j.0020-8833.2004.00310.x/full

Bryman A. 2008. Social Research Methods. 3rd ed. New York: Oxford University Press.

Bulkeley H, Castán Broto V, Hodson M, Marvin S. 2013. Introduction. In: Bulkeley H, Castán Broto V, Hodson M, Marvin S, editors. Cities Low Carbon Transitions. Revised pa. Milton Park: Routledge; p. 1–10.

Bulkeley H, Davies A, Evans B, Gibbs D, Kern K, Theobald K. 2003. Environmental Governance and Transnational Municipal Networks in Europe. J Environ Policy Plan [Internet]. [cited 2013 Sep 4]; 5:235–254. Available from: http://www.tandfonline.com/doi/abs/10.1080/1523908032000154179

Bulkeley H, Kern K. 2006. Local Government and the Governing of Climate Change in Germany and the UK. Urban Stud. 43:2237–2259.

Bulkeley H, Newell P. 2015. Governing Climate Change. 2nd ed. Milton Park: Routledge.

Busch H. 2015. Linked for action? An analysis of transnational municipal climate networks in Germany. Int J Urban Sustain Dev [Internet]. 7:213–231. Available from: http://www.tandfonline.com/doi/full/10.1080/19463138.2015.1057144

Busch H, Anderberg S. 2015. Green Attraction—Transnational Municipal Climate Networks and Green City Branding. J Manag Sustain [Internet]. 5:1. Available from: http://www.ccsenet.org/journal/index.php/jms/article/view/52101

Busch H, McCormick K. 2014. Local power: exploring the motivations of mayors and key success factors for local municipalities to go 100% renewable energy. Energy Sustain Soc [Internet]. [cited 2014 Apr 5]; 4:5. Available from: http://www.energsustainsoc.com/content/4/1/5

Davies A. 2005. Local action for climate change: transnational networks and the Irish experience. Local Environ [Internet]. [cited 2013 Sep 18]; 10:21–40. Available from: http://dx.doi.org/10.1080/1354983042000309298

Van Egmond J. 2011. Governing Climate Change in Cities : Investigating the Effectiveness of Transnational Municipal Climate Networks. [place unknown]: Maastricht University.

Fay C. 2007. Think locally, act globally: Lessons to learn from the Cities for Climate Protection Campaign. Innov J Polit [Internet]. [cited 2013 Nov 5]; 7:1–12. Available from: http://www.calgaryurbancampus.ucalgary.ca/innovations/files/innovations/Fay-ThinkLocally.pdf

Fenton P, Busch H. 2016. Identifying the "Usual Suspects"—Assessing Patterns of Representation in Local Environmental Initiatives. Challenges Sustain [Internet]. 4:1–14. Available from: http://www.librelloph.com/challengesinsustainability/article/view/253

Gawel E, Lehmann P, Korte K, Strunz S, Bovet J, Köck W, Massier P, Löschel A, Schober D, Ohlhorst D, et al. 2014. The future of the energy transition in Germany. Energy Sustain Soc [Internet]. 4:15. Available from: http://www.energsustainsoc.com/content/4/1/15

Hakelberg L. 2011. Governing Climate Change by Diffusion [Internet]. 1st ed. Berlin: Freie Universität Berlin, Forschungszentrum für Umweltpolitik. Available from: http://edocs.fu-berlin.de/docs/servlets/MCRFileNodeServlet/FUDOCS_derivate_000000001736/Hakelberg_ffu_report_08-2011.pdf?hosts=

Hakelberg L. 2014. Governance by Diffusion : Transnational Municipal Networks and the Spread of Local Climate Strategies in Europe. Glob Environ Polit. 14:107–129.

Kern K, Bulkeley H. 2009. Cities, Europeanization and Multi-level Governance: Governing Climate Change through Transnational Municipal Networks. JCMS J Common Mark Stud [Internet]. 47:309–332. Available from: http://doi.wiley.com/10.1111/j.1468-5965.2009.00806.x

Kronsell A. 2013. Legitimacy for climate policies: politics and participation in the Green City of Freiburg. Local Environ [Internet]. 18:965–982. Available from: http://www.tandfonline.com/doi/abs/10.1080/13549839.2012.748732

Oppowa S. 2015. Governance, Functions, and Traits of European Transnational Municipal Networks – an Evaluation by Means of German Member Cities. [place unknown]: Uppsala University.

Pachauri RK, Allen MR, Barros VR, Broome J, Cramer W, Christ R, Church J a., Clarke L, Dahe Q, Dasgupta P, et al. 2014. IPCC Climate Change 2014: Synthesis Report. [place unknown].

Strunz S. 2014. The German energy transition as a regime shift. Ecol Econ [Internet]. 100:150–158. Available from: http://dx.doi.org/10.1016/j.ecolecon.2014.01.019

Toly NJ. 2008. Transnational Municipal Networks in Climate Politics: From Global Governance to Global Politics. Globalizations [Internet]. [cited 2013 Sep 2]; 5:341–356. Available from: http://www.tandfonline.com/doi/abs/10.1080/14747730802252479

Wamsler C. 2014. Cities, Disaster Risk and Adaptation. 1st ed. London: Routledge.

Wamsler C. 2015. Mainstreaming ecosystem-based adaptation: transformation toward sustainability in urban governance and planning. Ecol Soc. 20:30.

Zeppel H. 2012. Governing carbon mitigation and climate change within local councils: A case study of Adelaide, South Australia. Commonw J Local Gov [Internet]. [cited 2014 Oct 2]:70–85. Available from: http://epress.lib.uts.edu.au/journals/index.php/cjlg/article/view/2690

Zeppel H. 2013. The ICLEI Cities for Climate Protection program: Local government networks for urban climate governance. In: Cadman T, editor. Clim Chang Glob Policy Regimes Towar Institutional Legitimacy [Internet]. [place unknown]: Palgrave Macmillan; [cited 2014 Sep 18]; p. 217–231. Available from: http://www.palgraveconnect.com/doifinder/10.1057/9781137006127

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This thesis investigates the impact of transnational municipal climate networks (TMCN) on urban climate governance in German cities. In order to uncover their impacts on cities, a local perspective has been adopted. The main finding of this thesis is that impacts of TMCN membership unfold in internal climate governance processes within the cities while interactions between cities and the networks are less important than previously depicted in research. The case of TMCNs in Germany demonstrates that the analysis of multilevel climate governance must not forget impacts that take place internally within the local level. In conclusion, to improve local climate governance, we should work to integrate the perspectives from the networks and from the local level..

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